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F. J. S. GORGAS, M. D., D. D. S.
RICHARD GRADY, M. D., D. D. S.

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ARTICLE I.

COMPETITIVE EXAMINATIONS FOR SCHOLARSHIPS.

BY RICHARD GRADY, M. D., D. D. S., BALTIMORE.

Read at Tri-Union Meeting, Old Point Comfort, Va., May, 1897.

For years it has been a feature in many (if not all) dental schools to receive beneficiary students, on the payment of half the tuition fees, when they have been recommended by the associations in the several States, or otherwise. Lengthening the time for graduation has increased the expenses incident to three courses of lectures and this, it is said, "works hardships on many young men who are struggling against poverty to obtain an education and are unable to meet the heavy expenses." Time will not be taken to discuss the question of "admitting poor young men to the colleges" or, in another form, "shall poor dental students be encouraged?" nor the statement that "most dental students enter college without proper preparation."

Statistics are not at command, from the 53 institutions teaching dentistry, as to the number of applicants for scholarships; but, applying the information on hand, there are four desiring to attend the dental colleges (as beneficiary students) to one appointed. Some dental schools have furnished, for this paper, the number of students and the number of beneficiaries in 1896-97. If a similar proportion prevailed in the 35 colleges reporting to the Association of Dental Faculties (varying from 9½ per cent. to 21 per cent. and averaging nearly 14 per cent.) there were from 516 to 1,161 beneficiary students, say more than 750, included in the 5532 matriculates during the year 1895-96. There are aspects of the system which it is impossible to exaggerate. What is the reason for beneficiary students? What is the object?

Previous to the adoption, by the National Association of Dental Examiners and the National Association of Dental Faculties, of the "rule prohibiting colleges from receiving beneficiary students recommended by state boards and associations," the committee on dental education of the Maryland State Dental Association (of which I am chairman) had awarded (early in July, 1896) scholarships in the three dental schools located in Baltimore.

It is the first time that the State Association has insisted upon a standard of education on the part of those entering as beneficiary students. It had been proposed that the examination should be fully equivalent to that for graduation at the Baltimore Polytechnic Institute (similar to the manual training schools of St. Louis, Chicago, Philadelphia) which provides for an adequate preliminary education and skill in the use of instruments; but the committee, anxious to make a beginning, gave an examination so elementary that no exception could be taken to it by anybody with a common school education. No preliminary acquaintance with the theory and practice of dentistry was required, and the examination was confined to three things: (1) Writing a letter; (2) An exercise in dictation; (3) solving four problems in fractions. There were eleven applicants, and three were selected according to their standing under the competitive examination. Respecting the plan, the President of the Maryland State Board of Dental Examiners wrote: "Permit me to add my endorsement, for whatever it may be worth, to the course your committee has taken concerning scholarships to our dental schools. It is certainly a move in the right direction and must be appreciated."

The examination follows.

COMPOSITION.

Write a letter to the committee mentioning

(1) Your name, age, residence.

(2) The dental school in which you desire the scholarship.

(3) What studies you were pursuing when you left school (giving its name and location).

(4) The names and addresses of two persons who would be willing to recommend you.

(5) Why you have decided to study dentistry.

ARITHMETIC.

(1) If a watch is 18¾ carats fine, how much pure gold is in it?

(2) Divide 17-18 into two parts, one of which is 2½ times the other.

(3) If I pay 62½cts. a cord for sawing wood 4 feet long into three pieces, how much more should I pay for sawing wood 8 feet long into pieces of the same length?

(4) A man sold 2-5 of 10-11 of his stock; how many fifths of 10-11 remained?

DICTATION.

THE NEW SCHEDULE.

"The matriculation examination shall be upon the following subjects:

1. *Latin.*—Translation from specified books. Grammatical questions. Easy sentences of English to be translated into Latin.

2. *English.*—Writing from dictation. Questions on English grammar, including parsing, and the analysis of sentences. A short essay to be written on a subject announced at the time of the examination.

3. *Arithmetic.*—As much as is contained in Smith's arithmetic.

4. *Algebra.*—Fundamental principles. Factoring. Fractions. Indices. Surds. Simple equations and quadratic equations with problems involving their use. Arithmetical progression. Geometrical progression.

5. *Geometry.*—First four books of Euclid, with easy exercises.

6. *Physics.*—As much as is contained in Gage's Introduction to Physical Science.

7. One of the following subjects at the option of the candidate:

(a) *Greek.*—Translations from a specified book, with questions in grammar.

(b) *French.*—An examination similar to that in Latin.

(c) *German.*—An examination similar to that in Latin.

(d) *History.*—History of England, or general history as in Swinton's Outlines of the World's History.

(e) *Chemistry.*—As much as is contained in Williams' "Introduction to Chemical Science."

It is recommended that the Board be authorized to secure the consent of the Governor-in-Council to the changes in the curriculum as soon as possible, but that the new schedule shall not go into force until October 1st, 1896.

Resolved, That the matriculation examination for the coming year be in all respects the same as last year."

It will be observed that the recommendation of the Association of Dental Examiners adopted by the Association of Dental Faculties prohibits beneficiary students of "state boards and associations" only.

The outlook is that the awarding of scholarships, by the colleges themselves, for exceptional merit, and because of character and promise and not because pecuniary assistance is needed, will take the place of the appointment of (so-called) beneficiary students who have been nominated by personal influence, or on the plea of poverty, or because the candidate is a preacher's son, or becauee the quota from the state in which the applicant resides is full and he is recognized as an actual resident of another state.

Recently the subject has received formal consideration in the Department of Dentistry of the University of Pennsylvania, and examinations for two scholarships will be held next September. I am indebted to Dr. Edward C. Kirk, the Dean of the Dental Faculty, for what follows; and, inasmuch as the subject is of general interest and is treated by an abler hand than mine, what Dr. Kirk has written is quoted at length, in the belief that, when published, it will be suggestive to other dental institutions. He says: "I thought perhaps it might be of interest to you as well as relevant to your subject to send you our circular setting forth the scope of the subjects which form the basis of our competitive examinations for scholarships in dentistry.

"We are constantly applied to by individuals for free scholarships in this department. The basis of the request is usually that the candidate is without means to pay for his tuition. The demands for free scholarships became so numerous and pressing that a committee of the Faculty was appointed to take cognizance of the matter and decide upon some means for meeting the difficulty. After much deliberation it was decided to ask the Board of Trustees to create two University Scholarships in Dentistry to be awarded annually on the results of a competitive examination, the basis of which examination should be the equivalent as that demanded for entrance upon one of the courses in the college department.

"The Board of Trustees have granted the request of the Faculty and the basis of the examination is that set forth in the enclosed circular and is the same as is required for entrance upon either the mechanical, electrical or civil engineering courses of the college department. The competitive examination for these scholarships is open to all applicants without restriction and they will be awarded to the candidates attaining the highest examination results. The Faculty feel that the mere question of inability to pay tuition fees should not be the governing motive in the granting of scholarships but that they should be granted rather upon the basis of merit. Our desire, where we furnish free tuition, is to furnish it only to the very best men who will be a credit to their profession and their alma mater, regardless of the financial question. The only other free scholarships granted in dentistry are those granted under our contract with the Board of Education of this city, numbering two each year which are given to meritorious graduates of our High School. With respect to these men I may say that graduates of the schools named are prepared to pass the matriculate examination of the college department of this University as set forth in the annual catalogue; and where they have attained a certain percentage are admitted upon certificate. No other scholarships are granted in this department. If our annual catalogue is issued before the date of the Union Meeting I shall take the liberty of sending you a copy in order that you may understand more fully the scholarship feature in our school.

Hoping you will have an interesting and successful meeting, I am,

Yours sincerely,

DR. RICHARD GRADY, EDWARD C. KIRK.
720 N. Howard Street,
Baltimore.

UNIVERSITY OF PENNSYLVANIA.—DEPARTMENT OF DENTISTRY.

Subjects which form the basis of the Competitive Examination upon the results of which are awarded the two University Scholarships in Dentistry.

The examinations will be held Tuesday, Sept. 21st, 10 a. m., in College Hall.

ENGLISH.

No candidate will be accepted in English whose work is notably defective in spelling, punctuation, idiom or division into paragraphs.

A.—(1) Grammar (as in Abbott's *How to Parse*, or Murray's *Advanced Lessons in English Composition, Analysis and Grammar*). (2) Composition.—A short essay, correct in spelling, punctuation, grammar, division by paragraphs, and in expression, written on a subject to be announced at the time of the examination.

B.—Reading. (1) The candidate will be required to present evidence of a *general* knowledge of the subject-matter of the following books set for reading, and to answer simple questions concerning their authors: Shakespeare's *As You Like It*, Defoe's *History of the Plague in London*, Irving's *Tales of a Traveller*, Hawthorne's *Twice Told Tales*, Longfellow's *Evangeline*, George Eliot's *Silas Marner*. (2) A special knowledge of the subject-matter, form and structure of the following works: Shakespeare's *Merchant of Venice*, Burke's *Speech on Conciliation with America*, Scott's *Marmion*, Macaulay's *Life of Samuel Johnson*.

For 1898: A general knowledge of the following works and their authors: Milton's *Paradise Lost*, Books I and II; Pope's *Iliad*, Book XXII; *The Sir Roger de Coverly Papers* in *The Spectator;* Southey's *Vicar of Wakefield;* Coleridge's *Ancient Mariner;* Southey's *Life of Nelson;* Carlyle's *Essay on Burns;* Lowell's *Vision of Sir Launfal.*

A special knowledge of the subject-matter, form and structure of following works: Shakespeare's *Macbeth;* Burke's *Speech on Conciliation with America;* De Quincey's *The Flight of a Tartar Tribe;* Tennyson's *The Princess.*

HISTORY.

A.—History of the United States (Fiske, Montgomery or Thomas is suggested).

B.—Greek History.—The History of Greece down to the death of Alexander, as contained in Oman's *History of*

Greece; with some details concerning the life of the people, as contained either in Oman's *History of Greece*, with Mahaffy's *Old Greek Life*, or in Myer's *History of Greece.*

C.—Roman History.—The history of Rome down to the death of Augustus, as contained in Allen's *History of Rome*, (pages 1-224); with such details concerning the life of the people as are contained in Preston and Dodge's *Private Life of the Romans.*

MATHEMATICS.

B.—Algebra (including factoring, fractions, simple equations and simultaneous equations of the first degree)

C.—Algebra (to the end of quadratic equations, including ratio, proportion, arithmetical and geometrical proportion, arithmetical and geometrical progression, surds and imaginaries, and the binomial theorem for positive entire exponents). (*C does not include B.*)

D.—Plane Geometry (as in the first five books of Chauvenet's or Wentworth's *Geometry.*

E.—Solid Geometry (as contained in Chauvenet's or Wentworth's *Geometry*).

F.—Plane Trigonometry (as in the more elementary portion sof Chaps. I-VI, in Crawley's *Elements of Trigonometry*), and the use of Logarithms.

GERMAN.

A.—Collar-Eysenbach's *German Lessons* (Longer Course), or an equivalent. The candidate's knowledge of grammar will be tested partly by the translation into German of a simple passage of English prose.

B.—At least two hundred (200) pages of modern German prose representing not less than three of the following authors: Benedix, Hauff, Heyse, Riehl and Zschokke.

PHYSICS.

As in Carhart and Chute's, or Gage's, *Elements of Physics.*

ARTICLE II.

THE ENAMEL ORGAN.

The first recognizable stage in the process by which teeth are envolved in the higher animals is, I need scarcely remind any one here, the growth of a band of cells derived from the surface epithelium, which penetrates the embryonic connective tissues of the fœtal jaw to a considerable depth, and is now known as the tooth band. From this primitive tooth band an epithelial bud, called the enamel organ, is produced at the site of each future milk tooth. The enamel organ is the formative organ. It calls the tooth into existence, and probably determines its shape and size, even although, as in several animals, it forms no part of the tooth finally produced.

A tooth band, theoretically, is constructed to originate a constant succession of teeth by the continuous budding of enamel organs from its lower margin. This happens in many of the lower vertebrata, but in mammalia the band becomes exhausted after the production of a second set of germs. In rare instances a third successional germ buds from a part of the tooth band which has already originated two others. Such a germ may remain abortive. or may continue to develop, and become either a supernumerary tooth or an odontome. The former conditions, the budding of a third enamel organ which undergoes no further development, is perhaps not so very uncommon, and is a point which should be settled as regards the human subject by examining a series of embryos during the later months of intra-uterine life. I have some sections at that period which certainly seem to show this third budding from the tooth band, but not sufficient to indicate its frequency.

The enamel organ as first produced is a solid bud of epithelial cells, but the latter, as the bud grows, are rapidly differentiated into the four characteristic layers of the enamel organ. The outermost or peripheral layer of cells are elongated. They are continuous with, and correspond to the important cubical layer of cells constantly found at the base of a stratified epithelium, and they fully retain their character of importance in the enamel organ. Over the deep half of the bud these cells constitute the internal enamel epithelium, from which the enamel fibres are developed; whilst those which cover the superficial half become the external enamel epithelium, the chief function of which seems to be the separation from the blood of those constituents of enamel which are elaborated by the internal epithelium. I think we should keep in mind this early association between the two layers of the enamel organ and their common derivation from the active cubical layer of the surface epithelium, because the value of the external layer is likely to be lost sight of, though, as I have frequently noticed in the germs of the sheep, ox and other animals, the character of its growth and the high vascularity of the papillary connective tissue associated with it suggest that it has useful work to do. The other two layers of the enamel organ are the enamel jelly, and the stratum intermedium. I believe there is a general agreement that the stellate cells are not functional, and that they merely fill a space which may be readily occupied by the growing enamel. As regards the cells of the stratum intermedium, the generally, but not universally accepted view that they recruit the internal epithelium as the surface to be covered grows larger, seems to me to be correct.

To return to the internal epithelium itself, we are still in want of exact information as to the process by which it is changed into enamel. The question as to whether the fibers are the result of secretion or conversion is not yet definitely settled; but to my mind it is of much less importance to decide this point than it is to recognize that enamel is certainly the outcome of some change in the cells themselves, and not a change which is effected by the cells upon an intercellular matrix. Herein lies the essential distinction between enamel and dentine. Dentine, like all connective tissues, has a matrix; enamel, like all epithelial tissues, has none. No doubt between the cells there is a certain amount of intercellular substance, which serves to cement them together, but this is in no way comparable to a connective tissue ground substance. In the end this cement becomes calcified, but only imperfectly, as is shown by the readiness with which acids act upon it and cause the fibers to fall apart. The recognition of this important fact in the construction of enamel opens the way to understand some of its peculiarities. One of these is the occurrence of the well-known cavities on the dentinal aspect of the enamel with which dentinal fibrils frequently communicate. The cavities have been variously stated to be within or between the fibres. The former is an irrational theory, and is not likely to find much acceptance; indeed, all tubes or spaces occuring in an epithelial structure must almost of necessity be placed between and not within the cells. We can best understand these enamel tubules, as they are met with in mammalin teeth, by examining microscopically germs in an early stage of development and after very careful fixation. On the first appearance of the layer of odontoblasts these cells are seen to be separated from the ameloblasts by a narrow band of transparent tissue, due to a change in the outer border of the pulp matrix. The transparent condition of the pulp matrix is evidently owing to the action of the odontoblasts, and is, indeed, merely the first stage in the formation of dentine matrix into which it will shortly be fully transformed. This first band of dentine matrix lying between the odontoblasts and the ameloblasts is not so sharply defined and cut off from adjacent tissues as superficial examination might lead one to image. Mummery has shown—and I fully endorse his views—that it sends processes between the odontoblasts which communicate with the fibrillar matrix of the pulp.

The presence of these processes is unquestionable, as they may be readily seen in certain stages of development in properly prepared sections. Now not only are there the processes described by Mummery, but the dentine matrix is not even sharply cut off from the line of ameloblasts. You may see in some sections that it sends arms of processes up between the enamel cells as it does down between the odontoblasts, keeping them apart, and leaving between them when they calcify elongated spaces filled with dentine matrix. That processes of dentine matrix thrust up between the enamel prisms should never calcify is certainly nothing surprising when one remembers that the first layer of dentine usually only calcifies imperfectly, being characteristically the site of the interglobulor spaces of Tomes.

If we accept this as a reasonable explanation of those spaces in enamel which are met with in close contact with the dentine, and admit the general principle that all spaces or tubes in enamel are between and not within the prisms, then the structure of genuine tubular enamel seems less difficult to understand. It is clear that any imperfect approximation of enamel cells must leave space between the prisms which can only be filled with an indefinite intercullular substance, or possibly by further prolongations of dentine matrix, and in neither case is it likely that such interprismatic matter would become calcified, because on the one hand it is too far removed from the influence of the odontoblasts, and on the other because the calcifying energy of the ameloblasts is almost entirely expended upon their own internal petrifaction. I would therefore suggest that tubular enamel is an enamel in which there is an excessive amount of intercellular substance only imperfectly calcified, and much as it looks like tubular dentine, it is really formed on an exactly opposite plan. The one is a negative and the other a positive picture. In dentine the cells occupy the tubes, and the intercellular substance becomes the solid calcified matter;

in enamel the tubes are represented by the intercullular substances becomes the solid calcified matter; in enamel the tubes are represented by the intercellular substance, whilst the cells become the solid calcified matter.

Tubular enamel is regarded as one of the rarer dental tissues, but—at any rate in fish—I am under the impression that it is sufficiently common, and is rather the rule than the exception. Take, for instance, the whole series of the elasmobranch fishes. In the development of their teeth an enamel organ plays a very prominent part. The whole surface of the tooth germ is covered with long and evidently functional ameloblasts, and when it is necessary to decalcify there is a space between the ameloblasts and the dentine matrix which could hardly have been occupied by anything but formed enamel. A study of the development of such teeth would lead one to assume that enamel would be well represented in the fully formed structure, yet they are described as follows by Tomes :—"A central body of osteo-dentine, the outer portion of which has dentinal tubes so fine, regular, and closely packed as to merit the name of a hard unvascular dentine, and over this again a thin varnish of enamel. (?)" Let me call your attention to a few sections of shark and ray teeth. In all you will notice that the main body of dentine is covered over with a further layer, which is distinctly differentiated from that beneath it by a line of demarcation. This latter, though partly obliterated in older teeth, becomes, in some immature specimens, a line of separation, allowing the cap of so-called hard dentine to come away from the rest. The cap is thickest at the apex of the tooth, and shades away at the base. It has, in fact, the shape and general appearance of a cap of enamel. Moreover, the external "thin varnish of enamel" is part and parcel of it, there being not the slightest indication of any line of demarcation such as should be more or less visible between enamel and dentine. Hence I am inclined to regard the whole of this outer layer of calcified tissue as enamel, but of the tubular variety; and if tubular enamel is constant in the elasmobranch fishes it is tolerably certain to be not uncommon in other classes.

A further point of interest in connection with the enamel organ is the question of its vascularity. This point has been raised by Professors Howes and Poulson, and is one which ought to admit of definite settlement. I am glad to know that Mr. Woods is preparing to investigate the subject. Up to the present I have never yet seen a vessel in the enamel organ, though I frequently examine this structure in various animals, and therefore hold to the commonly accepted view, that it, like other epithelial structures, is non-vascular. Concerning this question I have rather occupied myself in trying to ascertain how two such observers, if they are mistaken, could have come to hold such an opinion. It seems to me that a mistake might rather easily arise, for there is often a stellate-celled connective tissue just outside the enamel organ, which is almost indistinguishable from the enamel jelly, except for its vascularity. Over the apex of a tooth the internal and external epithelium soon come together, so that one frequently sees a tooth germ in which the apex is embedded in a stellate-celled connective tissue; while the sides are surrounded with enamel jelly. Under such circumstances the two tissues might readily be assumed to be two parts of the same structure, and the vessels of the former could hardly pass without observation. The similarity is rendered more complete by the line of condensed tissue of the sac appearing in section not unlike an external enamel epithelium undergoing atrophy. An examination of some of my sections will show that in small animals a careful discrimination must be exercised to distinguish between the two structures, though in the wide expanse of enamel jelly visible in the large germs of sheep and oxen no such mistake can be made, and it may be positively asserted that in these animals the enamel organ is non-vaccular.

Finally, in connection with the enamel organ, having made further observations in regard to Nasmyth's membrane, I should like to add a few remarks to what I said on a former occasion. Originally I experienced some difficulty in isolating and staining the structure. This is now readily accomplished in the following manner: A fresh unworn tooth is taken immediately after extraction and placed in a phloroglucin decalcifying solution for a few minutes. As soon as the membrane begins to separate the tooth is removed and well washed in several changes of water. It is then stained in Ehrlich's acid hæmatoxylin, again washed, and placed in an aqueous solution of eosine. Finally the membrane is stripped from the tooth and mounted in Farrant. By this process a permanent preparation of Nasmyth's membrane may be made within a quarter of an hour after the extraction of a suitable tooth and one in which the nuclei of the epithelial cells are often brilliantly stained. Under the microscope the membrane is seen to consist of two layers, the outermost being composed of large flattened epithelial cells beneath which is a thin translucent pellicle usually marked with hexagonal impressions derived from the ends of the enamel prisms. Hence I think there can be no doubt that Nasmyth's membrane is a remnant of the enamel organ, and not, as advocated by Tomes, a thin layer of cementum. On a former occasion I gave my reasons for not accepting the observations offered by Tomes in support of his view as proof that that view was correct. It is not necessary to repeat them; the specimens may be left to speak for themselves.—PAUL, *Dental Record.*

ARTICLE III.

PYORRHEA ALVEOLARIS—WHAT DO WE REALLY KNOW OF IT.

BY DR. W. H. TRUEMAN.

This brings us to the important question, concerning pyorrhea alveolaris, What do we really know? Upon what points do those who have carefully studied it universally agree? There are, it is a satisfaction to know, a few points upon which there has been little if any controversy; and these may, perhaps, furnish us reliable data for future investigations.

1. It is a disease seldom appearing until the patient approaches middle life. While exceptions to this have been frequently noted, they are, however, infrequent and exceptional, and have been so recognized.

2. It is not, at the outset, usually accompanied by any marked systemic derangement.

3. It usually begins insidiously, runs an uneven course, and is prone to relapse.

4. It always ceases, completely and permanently, when the teeth are lost.

I note that now and again observers have remarked the close resemblance physically, and the very marked differences pathologically, between pyorrhea and that acute inflammation of the gums due entirely to systemic conditions, known as stomatitis This is ushered in by well-marked and unmistakable systemic derangement, quickly reaches its height, responds promptly to systemic treatment, and, as a rule, in mild cases leaves the involved oral tissues but little the worse for its presence. When at its height, this condition resembles closely, so far as it affects the oral cavity, pyorrhea at its worst. We have the same turgid alveoli, the same fetid odor, and the same loosening of the teeth. Stomatitis, however, is a disease of childhood; pyorrhea, of mature age. Stomatitis comes on quickly, the acute and violent oral symptoms are merely the expression of a more profound systemic derangement —a systemic derangement so profound, indeed, as to frequently compromise life. In a mild, uncomplicated attack, it quickly runs its course, and the oral symptoms disappear as quickly as they came. It is very probable that the oral symptoms linking together stomatitis and pyorrhea are alike due to germ-infection, the sudden and violent onset in stomatitis being due to quickly-developed conditions favoring germ activity, and to the violent inflammation proving fatal to germ life. In severe cases so violent is the inflammation that gangrene, with all its attendant seriousness, not infrequently supervenes. In adults the gums are not so responsive to systemic disturbances, nor yet do slight disorders of the nutritive functions, as in early childhood, so quickly or so profoundly affect the general health. Under these conditions stomatitis becomes far less frequent and far less serious. It still, however, preserves its well marked characteristics distinguishing it from pyorrhea alveolaris, and these may have value in determining the cause and character of the latter disorder. I am strongly impressed that, after all, pyorrhea alveolaris is merely a germ-infection. It may be serious, involving a large territory, and incurable, or slight and easily controlled, just in proportion as the oral conditions favor or repress germ activity. How far the general health may affect these conditions we have, as yet, little reliable data. The pathology of stomatitis is suggestive upon this point. We may bear in mind that for the germ to become a pathological factor three things are necessary : (1) the germ; this, however, is omnipotent; (2) a dwelling-place; (3) congenial surroundings. In stomatitis the disturbed circulation, due to the primal lesion resulting in the swollen gum margins, furnishes over a widely extended territory abundant opportunity for germ colonies, and the surroundings seem particularly favorable to germ activity. Disordered digestion in the child and in the adult seems to produce in the oral cavity conditions especially favorable to germ-growth. In proof of this, the furred tongue, for ages recognized as a reliable and delicate indication of gastric disturbance, is now known to be due to the presence of germ life,—a form of germ-life that immediately disappears when the stomach resumes its normal condition.

In early life, while the gum-tissues firmly embrace the teeth and fully occupy the dental interspaces, there is little opportunity for any form of germ-life to obtain permanent foothold. Later, however, when normal changes materially alter this condition of affairs, when the saliva become more loaded with inorganic matter, when there is a more marked disposition to tartar deposits, when the gum tissues relax their firm embrace of the teeth and as a result debris-collecting spaces are formed along the gum-margins and between the teeth, when in addition to all this, as the natural result of normal wear and tear and the inevitable loss of tooth-substance, the gum and tooth-supporting tissues become more and more exposed to violence and accidents of various kinds during mastication, etc., we readily see how, in a thousand and one ways, opportunities for germ-infection are vastly increased. All without the slightest assistance from any systemic disorders.

We may remember, also, that of all germicides known to science none are so potent, so thoroughly reliable, or so universally accessible as are the natural secretions of a healthy human mouth. Were it otherwise, it would be utterly impossible to find a healthy individual among the many thousands who are compelled to daily breathe the germ-laden dust of a large city. It is only when the germ succeeds in quickly finding a little pouch in which to hide, secure from this, to it, destructive secretion, or when by mere chance it obtains foothold while the potency of this secretion is temporarily impaired, that it has the slightest chance to begin its destructive work. Once firmly settled, it begins to thrive, and a colony once formed creates conditions that may successfully combat its untoward surroundings. Changes constantly taking place in the oral secretions—now favoring and now opposing—fully account for the ebb and flow that marks, in its earlier stages, this disorder. The ravages of the disease, never wholly obliterated after it has once been firmly established, are ever an open door inviting the frequently noted relapses, until the complete loss of the teeth destroys forever its once favorite camping ground.

We thus see how fully the germ theory meets all of the few points upon which close observers for nearly two cedturies are in perfect accord.

I present it to your notice, not as a new theory, but as a theory fully in line with modern thought, and so fully in accord with observed facts as to warrant its selection as a new stand-point from which to study the cause and treatment of pyorrhea alveolaris,—a stand-point much to be preferred to those older theories with which, as I have shown you, our grandfathers labored so earnestly and so long, with so little profit.—*International Dental Journal.*

ARTICLE IV.

PORCELAIN FILLINGS.

BY DR. E. FORBERG.

I have been using porcelain fillings on a large scale since 1883. The material I use is of three kinds: (1) artificial teeth; (2) cylindrical bars; (3) body and enamel for fusing. Of artificial teeth the English ones, I consider, are the best, as their assistance is more homogeneous than that of the American, and they are therefore more suitable for grinding. I use the American (How's) crown only when it is a question of repairing a broken corner of an incisor, where more or less of the cutting edge has to be replaced, and when, therefore, with a view to strength, platinum pins are considered requisite. This crown is hollowed out at the back, and therefore very thin, and it is provided with four thin, pliable platinum pins, which can advantageously be used as fastenings for the porcelain filling.

My method of using parts of artificial teeth as fillings has been explained by me at the meeting of the American Dental Society of Europe, at Coblenz, in 1887. It is briefly as follows: Having completely excavated the cavity and finished the edges, I take a piece of colored paper, or somewhat thick tin-foil, and hold this over the tooth surface with one hand, while with the other hand I rub the paper with a polishing-steel, so that the edges of the cavity cut through the paper. In this way I get a mould which perfectly shows the form of the cavity. This mould of paper or tin-foil is then stuck on, with varnish or something similar, to an artificial tooth, the color of which corresponds with that of the tooth to be fitted, when it should be observed that the curvature of the surface of the artificial tooth should be tolerably in accordance with that of the natural tooth; it is preferable, especially in case of a larger defect, to place the mould on that part of the artificial tooth which corresponds with the position of the defect of the natural tooth.

Going by the mould, glued onto the tooth, it will now be easy, by using cutting pliers and corundum or carborundum wheels, to form an inlay that will perfectly fit the cavity, and this can be done in the laboratory, so that all that remains to be done in the operating-room are the finishing touches, which must be from the cavity direct; before doing so the mould should naturally be removed, and the inlay fastened on a metal mandrel with gum-lac or a mixture of wax, rosin, and gutta-percha, which mixture is very suitable for sticking on pieces with (as well as for using as temporary fillings). When the piece has been actually fitted, and everything has been made ready for the filling, the piece should be fastened in the cavity with Harvard cement. The cement, which should be well stirred and rather thin, is applied around the edges of the piece, which is then quickly pressed into the cavity, where it should be held with a steady pressure for some minutes to prevent it being displaced by compressed air or otherwise before the cement hardens. Only a thin layer of cement now separates the tooth from the porcelain inlay. The color of the cement should be a shade darker than that of the tooth. When How's crowns are used the piece should, of course, be fitted so that one or two of the platinum pins may be used as fastenings.

If, when, for instance, repairing a partly broken tooth, it is desired to have, on the palatine or lingual side, a material which, better than cement, can resist wear, the cement on that side may be covered with a thin layer of amalgam, or with gold, or one can, before inserting the piece, add melted glass or porcelain, thus forming the contour of the tooth. This course of action is preferable to making the parts entirely of glass or porcelain, inasmuch as one then gets a harder and stronger piece, and it is also then easier to get precisely the shade of color that is wanted.

The porcelain cylinders are naturally intended for cavities which have or can be given a cylindrical shape: thus, particularly for incisors with enamel defects; etc. The cylinders should be about twenty millimetres long and from one and a half to four millimetres in diameter, or nearly corresponding with the inlay drills they are met with in the market. The porcelain substance ought to be thoroughly burned, so that on breaking or grinding it one gets a firm and bright surface, and should be of such shades of color as are mostly met with. My method of using such porcelain cylinders, for which method I claim priority, is as follows: A cylinder, of suitable color, and a little thicker than the drill used, is fixed in a porte-polisher with gum-lac or the gutta-percha mixture previously referred to. When rotating in the machine the cylinder is clasped round with a corundum cloth held by the left hand, and is thus ground (slightly conical) until it can just be pushed into the cavity. The cylinder is then moistened with water or glycerine, is dipped into fine carborundum powder, and, while rotating, is introduced into the cavity, where it will then be perfectly ground in. In doing this the hand-piece must be held very steadily, with only a slight pressure on the cavity to prevent the cylinder from breaking. The corundum powder is then washed away with water, the cavity is dried, and the cylinder tried. The end of the cylinder is now ground off somewhat, so that the piece when placed, rests close against the walls of the cavity. It is better not to use too fine a corundum wheel for this grinding, as the cement will adhere better on a rough surface. If the cavity is not too shallow no other fastenings are required for the piece. The cylinder is then marked to the depth it enters into the cavity, and it is then cut nearly off at that place with a thin diamond or carborundum wheel. A thin layer of cement or gutta-percha solution is then applied round the sides of the cylinder, which is then inserted into the cavity with a firm pressure, and held there until the cement has partially hardened. With a slight movement of the hand the cylinder is then broken off at the place cut through. Some melted wax or paraffin is then poured on with a spoon-shaped instrument. The piece is not polished until the cement has hardened well. If these cylinder fillings are carefully done and well polished with Arkansas stone, etc., it is quite impossible to distinguish them from the natural tooth when standing a few paces off. The advantage of this method with cylinders instead of common inlays is that the cylinder can safely be fixed in a porte-polisher, and thus ground against a corundum wheel and cloth, as well as in the cavity itself, without the risk of slipping, which, with small inlays, generally is the case, even though they be fixed on metal mandrels. The cylinders can also be used for cavities of an oval or other shape when they are ground in as common inlays and cut off as previously described. Even then one has the advantage of being able to hold the piece well fast while working.

The way of using enamel for moulding is well known. I only want to mention a few details of my way of procedure. Having pressed the gold-platinum-foil well up, thereby using cotton and polishers, I pour some hard wax (consisting of one part of wax and two parts of rosin) into the mould thus obtained. I then pack the wax well, while it is hardening, and also press it over the surface of the tooth. By this means I get a very good cast of the cavity, and also prevent the gold-platinum mould from altering shape while being taken out of the cavity; and, lastly, I can get a plaster-cast model of the tooth, whereby I can better see the shape of it when forming and fusing the porcelain filling. I now mostly use Reisert's enamel, which is melted in an oven. In order to obtain a natural color a somewhat yellow enamel should be used at the bottom, and on top of that the color chosen. I generally also add some continuous-gum body to the first layer. I formerly used a heated instrument for pressing the inlay into the cavity, but it seemed to me as if that rendered the cement less durable. In cases of approximal cavities I generally use a thin linen band for pressing in the piece and removing the superfluous cement.

The question as to what cavities are particularly suitable for porcelain and glass fillings I think I must answer as follows: Fillings of the kind mentioned are suitable for visible defects in the incisors, cuspids, and (possibly) bicuspids. I have used Roustaig's cement as long as it could be had, and afterwards Harvard cement. As regards the question how long a time these fillings will last, it depends upon three factors,—viz., (1) the condition of the cavity, (2) the degree of thinness to which one has succeeded in reducing the cement layer, and (3) the amount of attention the patient gives to his mouth.

The cavities should not be too shallow (especially not cervical cavities, in which it is, as a rule, difficult to get durable fillings). I have several cases where porcelain fillings, in larger cervical cavities of irregular shape as well as in cavities which cover the whole of the approximal surface and half of the cutting edge of incisors have lasted ten to twelve years, nothing having been done to them in the mean time excepting refreshing the cement stripe a little once or twice. The most durable are naturally the cylinder fillings, because, having rotated and ground itself into the cavity, it fits so perfectly that the cement layer is absolutely as fine as a hair. Here, as elsewhere, hygiene plays an important part. To insert a series of porcelain fillings into cervical cavities on a person who, on account of neglect (or chronic gingivitis), has the cervical parts of his teeth covered with deposits is, I consider, labor totally thrown away.

The last question, whether porcelain fillings can be considered as a satisfactory substitute for gold, aside from æsthetic considerations, have previously been partly answered by the mentioning of porcelain fillings which are now ten to twelve years old, and which, by all appearances, may last as long again. It may generally be said that porcelain fillings can rival gold fillings in durability in cases where they, with a maximum cement layer, touch upon tolerably firm enamel edges, and where, in biting, their surface does not articulate against the opposite teeth.—*International Dental Journal.*

ARTICLE V.

INFLUENCE OF CLIMATE AND DIET ON TEETH.

Read before the Rochester Dental Society, December, 1896.

The subject which was assigned me by your committee to write upon for this evening, is one which I think you will all agree with me, when I say it, is one which requires much study and careful research to accomplish any positive results.

So when a brother came to me at the eleventh hour and asked me to exchange dates with him, I looked at him in despair, but I told him I would do the best I could. What influence has diet on the teeth ? That changes take place in tooth structure resulting from different kinds of food ? I do not propose in this short paper to give tables showing the relative food values; how much bone or how much muscular tissue we can hope to build up from a given quantity of a given kind of food.

All these theories are based for the most part on individual opinions, and are valuable or worthless just in proportion as they are corroborated by other investigation and experiment carried on in a similar manner.

Place a child in an equable climate, give it sufficient nutritious food, let it have pleasant surroundings, allow it to thrive and flourish, then when maturity is reached (providing it had a proper heredity at birth), will it not develop into a perfect, healthy representative of its kind, enjoying perfectly developed teeth ?

The simpler partially mixed diet, if you can comprehend the term, the steady routine diet which goes on from generation to generation, seems to produce the best dentures. The humbler classes of the purer races will show this I think.

The Germans always eat German, and their teeth are better than ours. The Scotchmen always eat Scotch, and their teeth are better than ours. The Americans eat *everything* indiscriminately, and their teeth are poor. I am speaking now of structure, not caries.

The laws governing nutrition are not well enough understood to say that any one kind of diet is an ideal one.

The food must necessarily conform to the climate. Climate possibly has more to do with the proper development of tooth structure than any one kind of diet. If this be the case, then in a climate where sudden extremes of temperature continually prevail, we should expect to find people with a poor quality of teeth; or in an equable climate, better organized tooth structure should be looked for.

This is the exact condition of things we find in our own country. A climate in which the temperature is ever changing from one extreme to the other, accompanied much of the time by a high humidity, and people with teeth of questionable structure.

The people of cold countries, such as laplands, have highly developed teeth, so also have the South Sea Islanders who live in a warm or semi-tropic climate. But these countries are not subject to the sudden extremes of heat and cold that we find in this climate. The people living on the extreme northern end of the Scandinavian peninsula such as Lapps, Finns, etc., are renowned for their strong even dentures, So is the African Negro.

Here again we meet the extremes of climate, the cold and rigorous of the north and the semi-tropic of the south. However, they are both equable.

Now, if we find a people living in a region within the Arctic circle whose chief diet is whale blubber and walrus steak, or possibly reindeer stew, if we find these people with fairly developed dentures; and on the other hand an African living on rice, dates and cocoanuts, who shows a corresponding good set of teeth, then we must look for some other influence than the food they eat for the cause. Nasal catarrh so prevalent in this country is almost unknown in climates of equable temperature. Aside from strumous and syphilitic heredity, nasal catarrh is the result of repeated or long continued exposure to the changes of our American climate. The vaso-motor centres are repeatedly irritated by the sudden thermal changes, until the respiratory portion of the lining membrane of the nasal cavity becomes inflamed and hypertrophied, the disease becomes chronic, and other tracts are involved.

If we find such havoc wrought in the membranes of the nasal air passages, disease so common, so wide-spread, why not look farther and see if tooth development is not influenced by the same climatic condition.

All food assimilation must be governed by the laws of supply and demand.

To convert an element in a food into an element in an organized tissue, there must first be established a demand for that element. Many of the foods which we have to-day are rich in tooth elements, but are utterly worthless as food whereby to supply these elements. Oat meal and milk, that stand-by of so many American breakfast tables, though high in its proportion of lime salts, is I think almost worthless as a tooth builder, owing to its faulty preparation and the manner in which it is eaten, namely, with a spoon, and without the least effort at mastication or mixture with saliva

Among my own people there is a family of four children that have been under my observation since infancy. The elder boy is fourteen years of age. The morning meal has invariably been oat meal and milk since the time they first ate solid food. Their bones and bodies are strong and healthy, but the teeth of the three younger children are almost as poor as the poorest, and I can do nothing with them but rely on pink gutta percha.

Here the diet made strong bones and tough muscles, why did it not make hard teeth ? There was no demand for hard teeth. The oat mush needed no chewing. Phosphate of lime knocked at the door, but found the sign *not wanted.*

Had the oat meal been made into bread, or even eaten dry from the original package, different results might have been obtained. I think that in most cases where the proportion of lime salts to organic matter is found to be below the standard, the cause will be found, not from lack of supply, but from other causes, such as climatic conditions, natural surroundings, or from the one quoted above.

It has been demonstrated beyond question that all *chemical* forms of lime salts are rejected by the system without having been absorbed. According to Lehman and Heiden phosphate of lime added to food is execreted in its entirety without any absorption.

According to Beaumetz phosphate of lime and phosphoric acid are precipitated immediately on reaching the stomach, and are rendered insoluble. Hence the absolute uselessness of prescribing chemical food either to growing children or pregnant women.

Phosphate of lime we must have, but only such forms as are presented to the system in organized combination, will it take up. Some kinds of food have a direct local influence on the teeth, namely, fruits. Oranges, lemons, apples, grapes and berries contain beside sugar and flavoring material, an acid, which by long continued application is capable of dissolving out the lime salts of the teeth. Citric acid, which exists in large proportions in lemon and orange juices, seems to have the strongest corrosive action on the enamel of the teeth of any of the fruit acids.

Tartaric acid or the acid found in grapes comes next in order.

Some tests were made with freshly extracted teeth to show this action of fruit acid. The juice was squeezed or pressed from fresh ripe fruit, the teeth placed in it and allowed to remain for twenty-four hours.

These experiments have been frequently repeated, and no claim is made for originality. To those who have never seen the action of the different fruit acids on enamel, they will prove interesting. I now hope to hear of some more influences of diet on teeth.

DISCUSSION.

Dr. Sibley : So far as effect of the climate upon the teeth is concerned, I am inclined to believe that, with those people who live in the far North and those who live in the semi-tropics, the diet plays a more important part in the make-up of the teeth than the climate.

These people are in the habit of living upon practically the same form of diet, and digestion goes on uninterruptedly. They assimilate their food regularly, while in our climate, people diet on a little of everything, as the essayist has said, and our digestion and assimilation are frequently impaired. The liver becomes inactive and we do not assimilate our food as we should; consequently we are deprived of a great deal of the nutrition that should go to build up the hard tissues of the body.

As for the practical application of diet to the every day practice of dentistry, I question whether it is possible to control the diet of our patients to any great extent.

I have noticed in a number of cases, and one especially, where I have care of a physician's family in which there are two young men, one of whom is a great oatmeal eater, while the other does not eat any, that the one who does eat oatmeal has excessive decay, while the other who does not has scarcely any.

According to Prof. Miller's theory of dental decay, it seems to me that no matter how strong the teeth may be, they are as apt to decay under proper conditions as though they were soft. Probably not as rapidly, but they will decay just the same.

I presume the theory is well known to all of us, that the fermentation of glucose between the teeth forms the biproduct lactic acid, which dissolves out the lime salts of the teeth. No matter what the diet may be this process goes on regardless.

A word concerning mastication may not be amiss. The process of mastication is a cleansing one, and also invigorating so far as the teeth are concerned. It is the first law of nature to remove whatever we have no use for, which undoubtedly accounts for the condition found in the epicurean classes.

As to the weapons given us with which to combat decay, the first and most important is cleanliness. Lime water has done its duty and been relegated to the past, giving place to the more modern, pleasant and effective milk of magnesia, which I have used extensively with very gratifying results to myself and my clientage.

In closing, if you will allow me to digress from the subject, I would like to mention the use of tonics, with people of low vitality and those who are nervous and irritable, thus permitting many operations that would otherwise be impossible.

Dr. Waugh: The ground has been so thoroughly covered by the essayist that there is but little left to say, but I would like to mention a little of my experience, as to the equability of climate and the effect it has upon the teeth during my travels of about four years in the South Sea Islands and south of the equator. Honolulu enjoys one of the most equable climates in the world. The food there consists almost entirely of a vegetable nature. I found in Honolulu people with the finest teeth I ever saw. I then went to the Samoa Islands. In that country I found them almost equal to the people of the Sandwich Islands. Then going to New Zealand, I found people with teeth equally as poor as our own. I traveled through New Zealand, Australia and Tasmania about two and a half years, and being a dentist, I of course paid particular attention to it, calling upon different dentists who were always courteous. Now, they are in an equable climate. I suppose there is a variance of about 42 degrees in the whole year. In South America, Buenos Ayres and Montevideo, they have just about the same grade of teeth that we have here; they eat and drink just about the same as we do. In Brazil I found people generally with elegant teeth. Now, I do not think that the change of climate has that deterious effect upon the teeth that the essayist states, that at least has not been my experience.

Dr. Holheinz: There is only one point I would mention to which my attention has been called. It seems to me that the people are consuming more and more year by year of prepared food. Go into a grocery store, and you will find the shelves piled high with green oats, wheat and corn, all ready to be used on the table and to be eaten with a spoon, which leaves no chance for mastication, very little chance for mixture with the saliva, and I venture to ask: If this continues to increase, what will the teeth in the future man be?—*The Odontographic Journal.*

ARTICLE VI.

SOME ESTABLISHED PRINCIPLES IN PROSTHETIC DENTISTRY.

BY L. P. HASKELL, CHICAGO.

PLASTER IMPRESSIONS.

The more difficult the case of which to obtain an impression the greater the necessity for using plaster.

AN INVARIABLE RULE.

Where the cuspid teeth have been extracted a year there is necessity and room for wearing the plate higher, and the artificial gum fuller, than elsewhere, to restore the contour of lip.

VACUUM CAVITIES.

In full cases, upper permanent, there is no need of air-chambers or vacuum cavities, except in rare instances. This is asserted after thirty years non-use of them, having had every conceivable shape and condition of jaws to deal with, and in the heaviest continuous gum sets. Often they interfere with suction. In this connection it should be considered that the center of the palate is hard and the only portion of the upper jaw that never changes from absorption or pressure. As the alveolar ridge is constantly liable to change (especially under rubber) gradually the plate rests and rocks on this hard center. In metal plates, a thin "relief" of wax, the edges flush with the model, is needed in all cases, except in less than one per cent. where it is soft, and no change whatever is needed. This has been my invariable practice for thirty years, and the results are eminently satisfactory.

DIE METAL.

Nothing has so simplified the fitting of metal plates as the use of Babbitt metal properly made. It would seem as though the exclusive use of this metal for forty-five years, after having used everything else ever used, would establish this fact. One writer in a recent work objects to it on account of expense. Five pounds costing $2.50 would last an ordinary practice a year. Babbit metal is sufficiently hard and tough for all cases. If it cracks it shows a lack of tin, the addition of a little will remedy it. The proper formula is copper one part, antimony two parts, tin eight parts, to be melted in the order named, otherwise the tin will oxidize in mixing.

As pure lead can not be poured on Babbit metal the melting temperature of the lead is reduced by adding one-sixth tin, and as lead is too soft for the counter-die, the tin hardens it. The die and counter-die should never be of the same metal, as neither will yield, and the softer metal (the plate) will be torn, or made very thin at prominent points, and their use is unnecessary. A second die of Babbit metal is seldom needed, and a second counter never.

OILED SAND.

Its advantages are two-fold, viz.: When once prepared it can be used many times without re-oiling, thus saving time and annoyance. When moistened with water, if too wet or packed so hard the steam cannot escape, blow-holes are liable in the die. This never occurs with oiled sand. It should never be used with zinc, as that is poured so hot it burns the sand too much. To the objections sometimes made to the "odor and soiling the hands," it may be suggested that these are discounted by the opening and handling of a vulcanite flask.

MOULDING FLASKS.

The Bailey moulding flasks are unfit for the purpose, too small and too flaring. More room is needed to pack conveniently. Have them made of heavy sheet iron, three inches deep and four inches diameter.

THE USE OF THE BLOW-PIPE.

It is strange, but true, that the blow-pipes furnished the dental profession from the earliest days to the present are simply jewelers' blow-pipes, and unfit for dentists' use.

The jeweler uses low-grade solders, and has no investment to contend with. The pipe is so small it has to be taken inside the lips, tiring the muscles.

The dentist with his high-grade solders and heavy investments needs a large blow-pipe, the mouth of which is pressed against the lips, so that the blowing is made easy; then with the larger orifice at the heat end a larger flame can be secured. Years ago in Boston I had a mandrel made on which I made such a blow-pipe for the profession. In the later years the dental goods dealers have at my request made such a blow-pipe which they have named the "Haskell."

I have found in teaching students they could learn easily the use of the mouth blow-pipe, and succeed better as beginners in metal work than with the automatic.

VULCANIZED RUBBER.

The most serious objections to the use of rubber for full upper dentures is its non-conductibility; the retention of undue heat, causing constant change in the process, so that in thousands of cases there is no ridge left, or only a ridge of thickened membrane. Dr. George Watt's theory was that the retention of undue heat did not cause additional absorption, but what was practically the same in results, prevented a replacement of lost tissue.

REPAIRING RUBBER PLATES.

The old method of repairing by means of dove-tails, holes and solutions has long since been discarded by progressive workmen, and in their stead a simpler method pursued. If a broken plate, fasten the parts together with wax, and fill the plate with plaster; if a missing tooth, wax one in place and flask only one-half of a flask. In both cases remove wax and clean the plate; in the broken plate cut away a portion of fracture, thinning the edges for a distance of one-quarter inch or more, leaving at extreme margin a depression of 1-32 inch. With a hot spatula press fresh rubber on to the surface and fill to the desired fullness, flask and vulcanize, and the union will be found perfect. In the replacing of the tooth use the hot spatula and finish flasking.

ALUMINUM FOR PLATES.

This makes an excellent cheap plate. To the objections sometimes made that it is acted on by a caustic solution of soda and is therefore unfit for use in the mouth, it might be said that the oral cavity does not contain a "caustic solution of soda" nor anything else that will deteriorate the metal. I have never seen the first evidence of such action in any plate after several years' use. As formerly reduced the metal contained little specs of iron which rusted, and holes resulted. The present metal is entirely free from any impurities. By the use of the "loop-punch" the rubber is firmly held to the plate.

ARTICULATING TEETH.

There are more failures from faulty articulation than any other cause.

The six anterior teeth should never come in contact resulting as it does in crowding the upper plate forward and down at the back.

Pressure should be exact on both sides on bicuspids and first molars.

If a lower, second or third molar is an inclined plane, do not allow the upper molar to come into close contact.

CONTINUOUS GUM WORK.

This work, after nearly fifty years' use, has no peer as a full denture. Nothing ever made approaches it as the strongest, most desirable, most natural in appearance, most healthy to the oral tissues and the most cleanly, when properly made.

Weight cuts no figure, except in rare cases.—*Ohio Dental Journal.*

ARTICLE VII.

SENSITIVE DENTINE.

BY DR. E. T. DARBY, PHILADELPHIA.

I think sensitive dentine a normal condition. All real tissues with rich nervous supply are sensitive. The fibrille undoubtedly have an intimate relationship with the pulp, and any injury to the fibrils is conveyed to the pulp. Healthy dentine is sensitive, but not to the same extent as diseased dentine (decayed dentine).

I do not believe in the theory of inflammation in the dentine. We can not have inflammation without blood-vessels, and there are no blood-vessels in the dentine. The fibrils in the dentine are nerve fibrils, and are a prolongation of the odontoblastic cells on the surface of the pulp.

Hypersensitiveness of the dentine is dependent on the amount of acid present in the decayed structure. This hypersensitiveness may be diminished almost instantly by putting in the cavity of decay a little bicarbonate of soda before beginning to excavate.

Cavities along the labial and buccal surfaces are often more sensitive because they are bathed in an acid mucus from the gingive. It is always well to apply a little bicarbonate of soda before beginning to cut these, especially if the rubber-dam be not first applied.

I don't think the nearness or distance from the pulp has anything to do with the excessive sensibility.

My treatment for sensitive dentine is the following: First, apply rubber-dam. Then pack into cavity for a moment bicarbonate of soda. Then wipe the cavity with absolute alcohol, dry thoroughly with warm air (not hot air), then put into the cavity for a few moments Robinson's (equal parts carbolic acid and caustic potash) and dry the cavity again, and go ahead with sharp excavators. When I have done this I have very little complaint from patients. I don't think cutting from the pulp instead of toward it has anything to do with the promotion or abuse of pain in excavating. Somebody made such an assertion years ago, and it has been handed along from one practitioner to another without question. There is no physiological reason why it should be true, and my experience and observation convinces me that there is nothing in it but theory.

If the dentist will take the time in each case to give preliminary treatment indicted, he will not be troubled much in his effort to excavate sensitive dentine. He may be obliged to renew the application if the decay be deep seated, but it is well worth the time spent.

Dr. Cheney: Apply rubber dam, pack the cavity with bicarbonate of soda for a minute or two, wash out with alcohol, and evaporate with warm air, not hot, using the warm air till dentine is dry. If this does not put the dentine in condition to be worked with sharp instruments without much pain, I place in cavity a pellet of cotton dipped in Dr. Black's, 1, 2. 3 mixture, or some of the essential oils, tannin and glycerin paste, cocain and glycerine paste, or Robinson's remedy, drying out with warm air. This treatment in a majority of cases works very nicely. In mouths known to be strongly acid, or where there are labial or buccal cavities I have the patient use Philip's milk of magnesia as a wash for a few days for the operation. With extremely nervous patients bromid of potassium in ten or fifteen grain doses, three times a day for three or four days, will in many cases work like a charm,

I prefer bromid of potassium to morphin and the coal tar derivatives, though great benefit comes from these many times.

Dr. Craven has well said "Much may be accomplished by discreet impressions made on the mind of the patient in a conversational way." Keep the patient interested in something foreign to the operation.—*Dental Review*.

ARTICLE VIII.

SOME POINTS ABOUT ARTIFICIAL PALATES.

BY OSCAR BOORT, D. D. S., TABOR, IOWA.

In the construction of artificial palates it should always be borne in mind that the levator palatai muscles are fully developed and in active operation. The cleft is the result of arrested development of the naso-pharyngeal valve and the palate bones, variably extensive. Movement of the levator muscles took place in the act of deglutition and articulation, the same as in the normal velum. At every nasal tone the levators drop, and with every attempt at throat or chest tones they rise, as though never weary of performing a useless task. Every successful effort to correct the defect with a mechanical appliance must comprehend these facts, and be so constructed that the levator muscles can take hold of and move it when they move.

With this clearly in mind it will at once be seen that a substance like elastic rubber will in nowise answer the requirements in an artificial velum; instead of being moved up and down its edges curl up and the levators have no control over it; besides, elastic rubber in the mouth soon deteriorates and becomes filthy. Whatever the substance used in artificial vela it should be hard and capable of taking a high polish. The velum must be light and so formed as to lie between and over the levator palati muscles, and so attached to the supporting plate that it will swing freely from its posterior border, and be constrained by a delicate spring in such a manner as to easily yield to the muscular action and be returned to its normal position when the muscles are at rest.

In gold alone, or in gold and hard rubber combined, may be found the proper materials for such work. To make the velum sufficiently light, whether of hard rubber or gold, it must be made hollow. Usually a congenital cleft is not less extensive than an entire bifurcation of the soft palate, but occasionally the cleft does not reach the border of the palate bones. Then it will be necessary to use the lance and carry the bifurcation forward in the median line to the posterior border of the palate bones, to make room for the appliance.

Congenital clefts are uniform in character and vary only in extent, but accidental lesions of the palate are irregular in character and must be treated accordingly. When disease, such as syphilis, has destroyed the velum and left the levator muscles untouched, however extensive its ravages in other parts, speech may be restored the same as in congenital cleft, with the advantage that the restoration will be complete and perfect at once, while in the congenital cleft practice alone will lead to perfection. The artificial velum, in syphilitic cleft, should always be made of a non-corrosive metal like gold or platinum, since rubber is liable to irritate the parts by keeping them unnaturally heated.

If the levator muscles are destroyed, of course no movable velm can be supplied; yet great benefit to speech will be obtained by extending the plate back just far enough that in the act of deglutition the superior constrictor of the pharynx will meet and touch it.—*Dental Digest.*

Communicated.

THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The fourteenth annual session will be held at Old Point Comfort, Va., commencing Friday morning, July 30th, at 10 a. m., and continuing in session Saturday, July 31st, and Monday, Aug. 2nd. The sessions will be held in the Hotel Chamberlain.

The hotels "Hyegia" and "Chamberlain" will give rates of $2.50 per day two in a room, $3.50 per day one in a room.

Fares on all the Trunk lines one full fare and one third, good for the sessions of the American and Southern Dental Associations.

The Old Dominion S. S. Co., Pier 26 North River will sell excursion tickets including meals and berths, $11.20, sailing every day 3 p. m., from Thursday, July 29, using the name of the Secretary.

Let every State send its delegates.

CHARLES A. MEEKER, D. D. S., Sec'y,
29 Fulton Street, Newark, N. J.

THE CHICAGO DENTAL SOCIETY.

CHICAGO, April 13th, 1897.

American Journal Dental Science:

The following is the list of officers of the Chicago Dental Society for 1897-98 elected at the annual meeting held in Columbus Memorial Building, Tuesday evening, April 6th, 1897: President, A. H. Peck; 1st vice-president, D. M Gallie; 2nd vice-president, G. T. Carpenter; recording secretary, Geo. B. Perry; treasurer, E. D. Swain; member Board of Directors, J. N. Crouse; Board of Censors, D. M. Cattell, A. W. McCandless, J. J. Whaley.

Yours truly,

GEO. B. PERRY,

Corresponding Sec'y.

FIFTH ANNUAL COMMENCEMENT OF THE UNIVERSITY OF BUFFALO, DENTAL DEPARTMENT.

BUFFALO, N. Y., May 1, 1897.

Editor The American Journal Dental Science:

The Dental Department of the University of Buffalo held its fifth annual commencement exercises, in connection with the Departments of Medicine and Pharmacy, in Music Hall, Buffalo, on the evening of April 27th, when the Chancellor conferred upon the following named students the Degree of Doctor of Dental Surgery.

The whole number of students matriculated for the term was 222. The number of seniors was 70. The junior class numbered 70. The freshmen numbered 82.

CLASS IN DENTISTRY.

Bertram John Baker, Jarvis Barraclough, Alfred Milton Borton, William Penn Brinton, Colin Cameron, Alfred Rayson Cook, Jay Herbert Dower, John Vosburgh Flaherty, Frank Arthur Gough, Frederick Dodge Greene, Leverett Lorenzo

Hamilton, Perry Frederick Hepp, Abram Lauder Hipwell, Henry Hamilton Ketcham, William Charles Luetti, Harry Benjamin Lyon, William Hyde Marks, William Spence McFarlane, Frank Chance McPhcrson, William Drysdale Moss, Robert Muir, Leonard Earl Noble, Seth Theodore Paine, Charles Henry Plumstead, Harry Pond Rawson, Wilbur Salathiel Rose, Clarence Levi Roys, Ph. B., Daniel George Simmonds, Howard Eugene Stone, Harry Nedder Tefft, Frank Hicks Underwood, Charles Henry Whitlock, Melrose Williams Wright, George Daw Wood, Harry Eddy Barnhart, Frederick Sherwood Belding, Warren Joseph Boyd, Alfred Byron Cairnes, Harry More Clark, Charles Stephen Denel, James Vernon Faulkner, Ferdinand John Freitag, Francis Leonard Greene, Ph. B., Beverly Chew Guile, George Tyler Head, M. D., George Taylor Hickelton, Carey Elijah Janes, Van Albert Lucy, George Thomas Lord, Arthur Bastedo Magee, Charles Jason McClure, John Frederick McPhee, Henry Stuart Merkley, Theodore Perkins Moyer, Frederick Bryant Niles, Henry Richard O'Brien, Charles Bicknell Payne, William Thomas Potter, Louis St. George Rickards, Samuel Rowan, Rolla Sabine, Frank Walton Smith, John Marcus Tanzer, Anna Mathilde Thrane, Clarence Renwood Waldron, Harry Lawson Whipple, Edward Arthur Wood.

Editorial, Etc.

THE EMPIRE DENTAL STERILIZER.—Wilmont Castle & Co., Rochester, N. Y.—The necessity for sterilizing dental instruments to prevent transmitting disease germs from one patient to another is so well recognized at the present time that a good sterilizer becomes a necessasy appliance in a dental office.

The Empire Dental Sterilizer, which appears to fully meet such an indication, consists of an oval metal drum 7¾ inches long, 5¾ inches wide and 6½ inches high, and divided perpendicularly into two compartments. In the upper part of one end is a movable pan designated to hold borophenol, an antiseptic fluid, one ounce of which in eight ounces of distilled water will make a 4 per cent. solution of boracic acid. This solution is well adapted for use in the sterilizer. The other end of the apparatus is adapted to contain anti-septicated sand which is thoroughly washed in a solution of boracic acid, then dried and finally triturated with boro-phenol. This sand is heated from 200 to 250 degrees F. For operating the sterilizer, pour one ounce of boro phenol and eight ounces of distilled or boiled water into the movable pan. Partly fill the other compartment with the antisepticated sand and place a small burner or lamp under the sand end. Dip the instruments to be sterilized in the solution for a few minutes (5 or 10), then draw them back and forth through the heated sand, and they will become bright, clean and perfectly sterilized. Small instruments such as burs, root-drills, clamps, etc., are to be placed in the strainer provided, when they are immersed in the solution for 5 or 10 minutes, when the hot sand is scooped up with the strainer a few times and let run through on the instruments.

Bibliographical.

THE AMERICAN TEXT BOOK OF PROSTHETIC DENTISTRY. In Contributions by Eminent Authorities. Edited by Charles J. Essig, M. D., D. D. S., Professor of Mechanical Dentistry and Metallurgy, Department of Dentistry, University of Penna., Phila. Illustrated with 983 engravings. Publishers: Lea Brothers & Co., Philadelphia and New York.

The contributors of this excellent work on prosthetic dentistry are Drs. H. H. Burchard, Chas. J. Essig, W. W. Evans, C. L. Goddard, G. Molyneaux, R. Ottolengui, A. Tees. Jr, and A. H. Howard. It is worthily dedicated to Dr. Louis Jack.

Its contents comprise twenty-one chapters devoted to the equipment and arrangement of the dental laboratory; metals and alloys used in prosthetic dentistry; principles of metal work; moulding and carving of porcelain teeth; preparation of the mouth, materials and type of dentures; taking impressions; models; dies, counter-dies and moulding; swaged metallic plates; the "bite"; selecting and arranging teeth; attachment to plate, and finishing; English tube teeth; continuous gum; aluminum and fusible alloys; vulcanite; celluloid and zylonite; temperaments and their characteristics of the teeth; artificial crowns, bridge-work; hygienic relations and care of artificial dentures; and palatal mechanism; all of which form a very complete treatise on prosthetic dentistry. Great credit is due Dr. Essig for his energy and labors in presenting to the dental profession such a valuable standard work on prosthetic dentistry, and also to the publishers upon the excellent manner in which it is printed and arranged. The illustrations demand notice not only on account of their number, but also for their excellence. The concluding chapter but one, of this work, by Dr Essig on "Hygienic Relations and Care of Artificial Teeth," is well worthy of perusal.

RICHARDSON'S MECHANICAL DENTISTRY. Seventh Edition. Six hundred and ninety Illustrations. Revised, enlarged and edited by George W. Warren, D. D. S., Chief of Clinical Staff, Pennsylvania College of Dental Surgery. Publishers, P. Blakiston, Son, & Co., Philadelphia.

The object of the editor in preparing the seventh edition of this well known and highly appreciated text book on prosthetic dentistry, has been to make it pre-eminently practical for students and young practitioners, and also that it may answer as an exponent of the present status of dental prosthesis. That he has succeeded, a perusal of the new edition clearly shows, as much of the text has been rewritten, three new chapters added, and new systems and appliances introduced, and without materially increasing the dimensions of the book so as to render it inconvenient. Many of the illustrations are new and from original drawings, and useless methods and obsolete theories have been eliminated.

The three new chapters added to this seventh edition, comprise "Application for the Correction of Fractured Maxillæ (Interdental Splints); "Appliances for the Correction of

Dental Irregularities"; and "Electricity and its Application in Dental Mechanics," all of which are useful, instructive and interesting.

The publishers are to be commended for the excellence of style, arrangement and printing of this work, all of which are superior to those of the former editions, and make a volume attractive and convenient, and well adapted for a standard text book.

MEDICAL DICTIONARIES. The improvement in medical dictionaries has been so marked during the past few years, that it is worthy of comment and praise. We especially refer to the three following :

"Gould's Illustrated Dictionary of Medicine, Biology and Allied Sciences," including Pronunciation, Accentuation, Derivation and Definition of the terms used in medicine, anatomy, surgery and all other allied sciences, is so pre-eminently superior to any that has preceded it, that it is beyond question the greatest in existence. It may be truly said that anything not found in this great and comprehensive work is not worthy of research. The Publishers, P. Blakiston, Son & Co., of Philadelphia, deserve great credit for the manner in which they have presented the work in question. The illustrations are not only numerous but are well executed, and the author in his preface announces that he knows the blessing of a publisher and of a printer who take pride in their work above and beyond the question of dollars and cents· Happy Author, commendable Publisher and Printer.

A smaller dictionary, but at the same time an excellent one, is "Duane's Students' Dictionary of Medicine and the Allied Sciences." Publishers : Lea Brothers & Co., Philadelphia. Its contents comprise the pronunciation, derivation and full explanation of medical terms, together with much collateral descriptive matter, numerous tables, etc.

"A Pocket Dictionary of 21,000 Medical Words," pronounced and defined is another of Dr. George M. Gould's works, which is also published in an convenient and attractive style by P. Blakiston, Son & Co., Philadelphia. It is both useful and convenient.

"Potter's Materia Medica, Pharmacy and Therapeutics. Sixth Edition. Author, O. L. Potter, A. M. M. D., M. R. C. P. Lond., Professor in College of Physicians and Surgeons of San Francisco, Cal., Author of 'Quiz Compends," etc. Publishers: P. Blakiston, Son & Co., Phila.

This new edition, which stands pre-eminent as a text book, has been greatly enlarged, while at the same time it retains the general plan and special features of the former editions. Ninety-seven pages have been added, containing forty-six new articles and one hundred and seventy re-written ones, besides many hundred sentences incorporated into the original text. Thirty-three new articles have been inserted in the section on Materia Medica and one hundred and nineteen articles in the section on Therapeutics. In the appendix, the article on "Treatment of Poisoning" has been carefully revised and enlarged, all of which render this work, in its sixth edition, one of the most reliable and comprehensive of text books.

"Compend of Dental Pathology and Therapeutics." By Henry H. Burchard, M. D., D. D. S., Special Lecturer upon Dental Pathology and Therapeutics in Philadelphia Dental College. Publisher: The S. S. White Dental Mfg. Co., Phila.

The object of the author of this compend was not to present a volume of questions and answers on dental pathology and therapeutics which will aid the student in memorizing answers for examinations but rather to have each of them represent a guiding principle in such subjects; in other words "a student's note-book, as it is interlined with blank pages for additions and details to be derived from, or in conformity with didactic teachings. That the author of this small work has succeeded in accomplishing his object an examination of it will clearly prove. Such subjects as Hyperæmia, Inflammation, Bacteria, Fever, Septicemia and Pyemia, Embolus and Thrombus, Necrosis, Regeneration, Dental Histology, Anatomy and Embryology, Malformations of Teeth, Primary Dentition, Eruption of Permanent Teeth, Diseases of Enamel, Green Stain, Diseases of Dentine and Pulp, Dental Caries, Therapeutics of Caries, Pulp-capping, Extirpation of Pulp, Diseases of Pericementum, Calcic Inflammation and Calculi, Pyorrhœa Alveolaris, Erosion of Teeth, Dental Pharmacology and Materia Medica and Contents of Dental Medicine Cabinet are treated by questions and answers, rendering the work a convenient, valuable and comprehensive compend, which cannot fail to aid the dental student and also the dental practitioner.

"A Practical Treatise on Artificial Crown- and Bridge-work." By Dr. George Evans, Fifth Edition, with 625 Illustrations. Publishers: S. S. White Dental Mfg. Co., Philadelphia.

This new edition of what has become an authority on crown- and bridge-work, merits all and more that has been said in its favor by reviewers of the former editions. To prevent a bulky presentation, the author in this fifth edition has omitted obsolete matter, curtailed descriptions of unimportant variations, avoided, as far as possible, repetitions, and endeavored to treat his subjects concisely, without sacrificing clearness for brevity. There is no doubt but that this new edition will receive the same hearty approval from the dental profession as the preceding ones.

Monthly Summary.

AN EMPTY PULP CANAL.—By Dr. Hyatt, Brooklyn, N. Y.—I came across a case last summer which was new to me. I was cutting down a bicuspid tooth to crown it. There was a cavity—not a large one—on one side, and in removing the decay I found an exposure of the pulp. I treated it, capping it with asbestos paper and inserting cement filling probationally. The patient then left town, returning in a week, when I proceeded to complete my operation. In grinding the tooth I removed the cement filling and the asbestes, but to my amazement I found the pulp chamber empty wholly to the end of the root. When I first exposed that pulp, it bled freely, yet within a week's time there was nothing there;

the canal was perfectly dry. The patient, who was an old friend of mine, said that probably it was like some dead trees, which we have all seen, on one end of which there is a little green twig. In this case the pulp was probably dead before I commenced operating on it, and perhaps just the corner which I touched had a bit of life.—*Items of Interest.*

UNNECESSARY SACRIFICE OF DENTAL PULPS.—By Dr. W. A. Siddall.—There is nothing in dentistry which requires more skill and thought and good judgment than to properly place anchorage for a filling without danger to the pulp. To be able to tell where the pulp is in a tooth and to so place anchorage that the filling will not be injurious to the life of the pulp, requires the greatest judgment.

There are so many things to be considered—the age of the patient, the density of the tooth, any peculiar shape of the tooth or cavity. We must look out for any unusual location of the pulp or unusual length of the horns of the pulp.

I believe that there are a large number of pulps sacrificed unnecessarily by a lack of care and judgment in the preparation of cavities.

There is no question but that the use of hot air in connection with a certain medicament for sensitive dentine, a few years ago, resulted in the death of a great many pulps, and we should be careful to know what effect any new treatment for the same purpose may have on the pulp.

No doubt many pulps will be sacrificed by the use of cocaine and cataphoresis.

It is often a difficult thing to diagnose an exposed or nearly exposed pulp, and especially is this so when the dentine is insensible to pain. I would not underestimate the value of a method whereby the dentine can be desensitized, but would urge that unusual care be exercised in its use.

Whether cataphoresis will prove to be detrimental to the welfare of the pulp remains to be seen, but certainly unless great care is used many pulps will be destroyed by its use.—*Ohio Dental Journal.*

THE DESTINY OF THE THIRD MOLAR.—By D. L. Hertig, D. D. S.—I have never heard any satisfactory explanation as to why the wisdom teeth put in their appearance from ten to twelve years after an abundant supply of the organs of mastication has already been provided.

Not a dentist in the land will disagree with me when I say that 28 teeth are enough for any man, be he Zulu or professor; that is, if the aforesaid 28 can be kept in good condition, which in a great many cases is impossible.

Here is where the utility of the third molar manifests itself; here is where its late arrival shows as much forethought on the part of the Supreme Designer as does the early advent of the six year molar. Not because the lapse of ten or twelve years allows the jaws to develop so as to receive it. No!

Had he willed it so, the Ordainer of all could have caused the same development to have taken place in the youth of 14, for the reception of the third as did take place in the child for the reception of the first and second molars.

I think a different plan was intended.

I regard the third molars, coming as they do years after a full complement of teeth has been supplied, as auxiliaries, reinforcements in fact to the original set for the accidental loss of one or more of them. We see this illustrated time and again. We cannot fail to notice the important duty performed by these organs.

I have observed many cases where the timely arrival of the wisdom tooth has filled the space and supplied the loss of a valuable grinder. In this way it fulfills a more important mission than if it came merely as an addition to an unbroken arch.—*Ohio Dental Journal.*

DRAWING ROOM:—"Do you know," said the man who was going to have a tooth pulled, "I don't think 'dental parlor' is a good phrase."

"No?"

"Drawing room would be much better."—*Woman's Journal.*

THE
AMERICAN JOURNAL
—OF—
DENTAL SCIENCE.

Vol. xxxi. Baltimore, June, 1897. No. 2.

ARTICLE I.

THE REASON OF THE FAITH THAT IS IN ME.

BY LINAEUS C. SHECUT, OF MARION, S. C., MEMBER OF THE JUNIOR CLASS OF THE UNIV. OF MD. DENTAL DEPARTMENT.

How often do we hear students asked the question, Why do you select dentistry? And how seldom is it seriously considered! Do we stop to think that the answer conscientiously given is the index to our future? No doubt every case has its own circumstances that lead up to the study of dentistry, but still it should possess an over-ruling purpose that controls these. So, thinking upon the possibilities of our profession it might not be amiss to consider and even dwell upon the spirit that characterizes the young men that are becoming dental students. True it is, some may enter "for money's sake;" but watch the future of such, and though time may look kindly upon them even to the gratification of their desire, though many rise to praise their skill and learning, still the fact that a sordid ambition was the incentive to this end would cause even their masterpieces to hide themselve in reproachful shame at the gaze of honest men. Happily for us, there are not many such. The vast majority possess the true sentiment, and oh! how much more comforting to consider the future of one of these. Though the crown of wealth may not rest upon his brow, though the artistic touch of others may surpass his handiwork; still, the knowledge of an honest purpose nobly pursued will cause the people to praise his goodness, and the profession to honor his record.

So in the beginning, as young men entering upon the field of dentistry, we should fully realize its present scope and future possibilities as a science, then satisfy ourselves that our purpose is to work for its elevation with our best talent and then be true to our purpose, and success will surely crown our labors.

It is a source of great gratification to look out upon the colleges of the country and note the fine quality of intellect and character that stamps the students. It is in these that we must place our trust and stake our hope for the future, for the demands of competency can only be met by such. Our colleges, boards and the profession should mutually work to keep the standard high and its attainment deserved, so that our profession will be made up of men all possessing the element of success. Our age, I fear, is learning to hold sentiment too lightly, caring too little for the spirit of things, being satisfied merely with their accomplishment. We should stop and consider how such things count. Notice it among the men of our profession. See the test of the student at college in the "failure of first effort." As he looks out and contemplates the field of study and labor that lies before him, and when that characteristic feeling that he should know it all at once comes over him, how strongly do the words of Longfellow come back, "Art is long and time is fleeting."

Right here we find the test of the "make-up" of a man. Lucky for the world that he does not remain long in this mood. The other side of the canvas now dawns upon him. He sees brightness ahead, and will sketch you the future with brighter crayon and gild it with golden rays. In a nature of this kind ambitious desire is at its height and needs only time to be satisfied. The bag of gold may be at the rain-bow's end but still he believes he can find it. The twin sisters fame and renown may be cradled far in the bosom of the heavens, nevertheless they are shining there for him. In other words he sees success ahead, and "hope springs eternal in his breast." When we can look out and see our young men with such a spirit as this, we can at once give the reasons of the faith that is in us for the future of dentistry. For what relations do the individual spirits of any profession bear to its advancement? Could dentistry occupy its present place among the sciences if its progenitors had been men of weak minds and irresolute. Who of you that have succeeded, in your youth, did not see over the confronting obstacles the bright future? Can that spirit that sees nothing but darkness ahead and quakes at the first touch ever rise? Never! The spirit that succeeds is the one that brooks no defeat, to whom present difficulties predict a brighter future and present failure is but an assurance of coming success. These are the men we want in our profession, men that have intellect, character and noble ambitions, men given to exploration and research, and above all others Christian men. To obtain such our colleges must do the sifting. Let the standard be in the reach of every honest striver, but let only the fit survive. I believe the majority of the colleges are doing this. It was my pleasure to attend the past course of lectures at the University of Maryland. At this school the students of the three departments, (law, medicine and dentistry), formed a very close relationship, especially was this so between those of medicine and dentistry. Being thrown together in and out of the lecture halls each was constantly learning of the other. They learned not only how closely were they related, but also how clearly were the separating lines of the two professions defined, and as these men mingled together how gratifying was it to see the dental men—from strength of mind, force of character and power of application—stand the peers of any of the rest.

I feel that it is this way in the other colleges. And now as a student, one who has yet the requirements to meet but one who feels that the cause is worthy the best efforts of every seeker, I would say to the colleges—keep on in your course, reaching out for the time when our hopes shall be realized and stop not—

Till teeth shall have ceased to decay
And man has driven all pain away.

ARTICLE II.

TWO INTERESTING CASES OF CAPPED PULPS.

BY R. E. SPARKS, M. D., D. D. S., KINGSTON, ONT.

My experience of capping exposed pulps has not been of the most encouraging character. After practicing it for twenty years, in all cases where there seemed to be any probability of success, I am led to wonder who extracts or treats the failures of those who report almost universal success.

I think I get a fair share of cases; and, as I said before, I cap all cases where there promises to be a probability of success. I have tried all methods that I have read of, or heard advocated. While I recognize the advantage of a tooth having a living pulp over one from which the pulp has been removed, I must confess that, from my experience, I feel much more confident of success when I have made an application to devitalize an exposed pulp than when I have capped it.

Two cases came under my notice recently, which illustrates this :

Case 1. Miss M., aged about twelve, came to have her tooth filled, on February 27th, 1890. Among other cavities was one on the anterior surface of the left lateral incisor. It was only an ordinary sized cavity, and had never given any trouble. When I removed the decay near the cutting edge, I was surprised to find I had made a slight exposure of the pulp. I capped it. It gave no trouble. On July 8th, 1891 I refilled it with ceme t. On March 9th, 1894, I refilled it with gold, everything being, apparently, in a satisfactory condition. Until about the new year, 1897, I would have reported this an unqualified success. At about this date the young lady came to my office complaining of severe pain in the tooth. I found the gum swollen above it; the tooth somewhat loose. The color had remained remarkably good. The characteristic opacity was present, however, upon close inspection. This, with the other symptoms, convinced me that my grand success, as in many other cases, was an utter failure. Upon opening into the pulp chamber, pus boiled out profusely. After thoroughly cleansing and a few daily antiseptic treatments, the root was packed with cotton, saturated with eucalyptol and closed up until the 16th, when it was refilled permanently, and, so far, is perfectly comfortable.

Case 2. Dr. R., aged about 65, came complaining that between his first and second molars, on the left side of the lower jaw, food would wedge, and was difficult to remove Upon examination I found the gum receded considerably from his teeth, making large spaces between them. In the space referred to, I found a large cavity on the posterior surface of the first molar, about the neck, opening out well to the lingual side. I removed the decay from this opening. At one point it was very sensitive. I suspected that the decay had reached the pulp, but as the tooth had caused him no pain before, I filled the cavity with cement. About two months afterwards he reported that from the time the tooth was filled it was sensitive to thermal changes; that it had become so much so that he had no comfort with his meals. It pained when he went out doors and again when he came in. I was convinced that the pulp must be devitalized. I opened through the grinding surface; a slight shock was caused when the drill opened into the pulp chamber. The main body of the pulp was removed without pain, and the opening enlarged. I found a little nerve matter not entirely dead in the root canals. I dropped a drop of the saturated solution of cocaine in carbolic acid into the pulp chamber and after a little patient working with a broach was enabled to remove the balance of the nerves. After drying the canals with cotton on broaches, followed by hot air, I swabbed them out with eucalyptol, and filled with chloropercha and gutta percha points, at the same filling. This was some months since, and the doctor reports having had no trouble whatever since the operation.—*Dominion Dental Journal.*

ARTICLE III.

PULPLESS TEETH AGAIN—REPEATED DRESSINGS.

BY J. W. WASSALL.

We have dead dentine infiltrated with matter highly irritating and poisonous to living tissue in intimate contact with vital cementum, which, in turn, is closely enveloped in pericementum.

What must the effect be on the cementum and peridental membrane of the materias morbi which are present in the underlying dentine?

There is no escape from the conclusion that it must account for many morbid conditions and symptoms, the etiology of which is otherwise obscure. There are, no doubt, exceptions of teeth in this state which cause no discomfort. But a little more time may prove that even these cases will not continue quiescent.

Unquestionably, this condition is responsible for numerous affections, more or less difficult of diagnosis, varying from necrosis to remotely situated abscesses, the only subjective symptoms in the causative tooth, discoverable, being a slight sense of lameness in mastication or to palpation.

What treatment does this pathological state indicate? It will not be uninteresting to first notice some of the methods which have, of late, been prominently set forth: The various mummification processes are only temporarily effective because, to use Dr. Harlan's words, "they will not stay mummified."

Emil Schrier destroys pulp-remains with a mixture of sodium and potassium, which is objectionable on the ground that the action of the drug does not extend into the entire depth of the tubules.

Professor Frank Abbott has written a work on "Dental Pathology and Practice" which will be widely read. It is peculiarly unfortunate for the younger members of the profession, whose methods are most likely to be influenced by it, that the chapter devoted to the consideration of this question, should be so inconsistent with modern bacteriological knowledge. Dr. Abbott imparts a lucid understanding of the fact of putrid dentine and the conditions to be overcome, but the treatment proposed is contrary to the commonest laws of asepsis. The triumph of modern surgery is secured by striving to prevent the entrance of germs into, rather than their destruction after admission to, a wound. How hazardous to teach that a pulpless tooth may be operated upon without first adjusting the rubber dam. The neglect of this precaution against the ingress of the myriads of mico-organisms, which are always present in the human mouth, is hardly excusable at this day. Dr. Abbott also recommends the use of bichlorid solutions for syringing out the pulp-debris. "This is of doubtful utility, because it is at once precipitated in the presence of albumen, thus losing its germicidal and antiseptic powers." (McFarland).

It is also a bad practice to pump zinc chlorid through a tooth to cauterize a pus-sac until a course of treatment for sterilization of the dentine with diffusible disinfectants has first been completed.

These few criticisms are submitted in order to substantiate the charge made at the opening of this paper, that much of the modern practice in the management of pulpless teeth does not conform to the present status of bacteriological science.

The successful treatment of teeth contaminated with putrid pulp-matter would to my mind, seem to depend upon the strict observance of two details of procedure: First, the exclusive use of diffusible disinfectants.

Second, the repeated and continued application of the disinfectant dressings for a sufficient length of time.

The reason why I give diffusible disinfectants the preference over coagulating drugs is because I am satisfied that exhibition at the pulpal orifices of dentinal tubules forms a plug of coagulated matter which prevents the further ingress of the disinfecting agent, imprisoning within the tubules putrefactive matter which will be a permanent source of irritation to the cementum and pericementum. If it is true, as maintained by Drs. Truman and Kirk, that the entire contents of the tubules is coagulated, there is nothing gained, for the resulting mass is suitable pabulum for micro-organisms, hence there would be no assurance that putrefaction would not recur within the tubules. In the investigations thus far published, the preponderance of evidence seems to be in favor of the avoidance of the coagulating drugs in the roots of pulpless teeth.

The second requisite to success in the disinfection of putrid dentine mentioned, was the element of time: How long shall a dressing be kept in a canal before it is proper to fill it? Until the dentine is permeated throughout its entire depth, and until all micro-organisms and their spores may reasonably be expected to be destroyed.

My observation are that these results are obtained in not less than twelve days—oftener sixteen or twenty—and in some few cases a little longer course of treatment is required. The dressings should be changed every four days until no stain or odor is perceived on the cotton-dressing other than the drug employed. Even though the dressing may come away clean on the fourth or eighth day, and you feel certain that the bacteria are killed, it is imperative that the use of the drugs be continued for the full period, in order to kill any spores which may be present, for they offer greater resistance to germicides, and hence require more time for their destruction.—*Dental Register.*

ARTICLE IV.

COCAINE.

BY DR. W. I. JONES, NELSONVILLE, OHIO.

The following is a formula we use and pronounce good:

℞	Cocaine,	gr. x.
	Listerine,	℥ss.
	Aquæ distillat.,	℥ij.

This makes a little less than one and a half per cent. solution. In fifteen minims of this soultion, which will be found sufficient for the extraction of a tooth, there is but a fraction over a fifth of a grain; this amount is, with rare exceptions, non-toxic. We have used cocaine for over seven years, and in the last two years we have injected it hypodermically into more than two thousand persons, have used it in numerous combinations, various percentages, and on "all sorts and conditions of men." We have had some peculiar experiences, all of them interesting and instructive. Very rarely will a careful use of cocaine cause any untoward result; ordinarily it is quickly eliminated. Sometimes it will stimulate, and a sense of well-being is produced; at other times the injection is followed by a feeling of oppression, which may be quickly relieved by the inhalation of ammonia or ether. After an over-dose the pulse becomes weak and rapid, breathing is labored and shallow, a cold perspiration breaks out, and the skin is clammy. These symptoms are at times accompanied by clonic couvulsions. In a case of this kind nothing should be done that will excite the patient. He should be placed in a recumbent position, and stimulants administered. Aromatic spirit of ammonia is one of the most reliable cardiac stimulants, given by the mouth in fifteen to twenty minim doses, diluted in water or injected hypodermically; inhaled, it stimulates the trifacial nerve and increases blood-tension by reflex action on the vaso-motor center, and prevents syncope. To relieve the nervous symptoms, one-eighth grain doses of morphine may be given by the mouth. If the patient is unable to swallow, inject hypodermically.

Great care should at all times be used in the administration of an anesthetic, no less so with a local anesthetic than with one of general effect. We have given cocaine when the patient was known to be affected with valvular disease of the heart, believing the heroic method for the extraction of a tooth in a case of this kind more liable to do harm than would cocaine, and we have administered large doses to persons on whom at first minute doses have had apparently toxic effects; the eyes would become dull, countenance pale, skin clammy, which was quickly relieved by stimulants, more cocain given, and as the operation proceeded the patient grew stronger. Idiosyncrasy, no doubt is the only explanation for many peculiar cases. By the injection of pure water I have caused what was apparently cocaine poisoning. If cocaine had been used, it would have been condemned for what was only a manifestation of the temperature of the patient.

Eighteen months ago William R. came to my office to have a tooth extracted. Cacaine was injected, and almost immediately we found it necessary to administer stimulants. A year later he returned to have another extracted, and requested that "that stuff" should not be used, thinking that it had made him sick the last time. We complied, and turned to get an instrument. This opened the show; and there followed every indication of cocaine poisoning.

If a hysterical woman should come to your office accompanied by a hen-pecked husband, and you should have a scene, do not be in a hurry to attribute it to cocaine. In every case study the temperament of your patient, and act accordingly.—*Dental Cosmos.*

ARTICLE V.

CLEANING THE TEETH.

BY DR. J. C. WING, ENGLAND.

An ordinary simple tooth powder should contain :

A scouring and polishing powder, of fine quality. such as precipitated chalk. An antiseptic. An antiacid, such as carbonate of magnesia. A cleansing agent in the form of a neutral soap. A flavoring agent, such as attar of roses, or wintergreen.

Advertised powders and washes should be avoided, as the ingredients are not known. Any dentifrice that is recommended for whitening the teeth is either incapable of accomplishing what is claimed for it, or does so at the expense of the integrity of the enamel. It is a good plan, in acid saliva, to rub a little precipitated chalk into the interstices of the teeth the last thing at night. The quantity need only be sufficient to counteract the acidity during the night. Lime water may be used as a mouth-wash where the mucous secretions are viscid or fetid, and it also has the effect of increasing the lime in the structure of the teeth. Its unpleasant taste may be disguised by a flavor-agent.

Phenol-sodique makes a good mouth-wash, as it is anti-septic, astringent, antacid, styptic and disinfectant. Listerine, izal, and other preparations of a like nature are also useful. More than usual care should be taken during sickness and pregnancy to see that the mouth is kept in a clean aseptic condition, this consideration being frequently overlooked.—*British Journal.*

ARTICLE VI.

COMPOUND CEMENT AND AMALGAM FILLING.

BY DR. H. BALDWIN, ENG.

The *modus operandi* is as follows: The cavity should be excavated with the usual care as regards removal of the decay, but the amount of undercutting which is necessary is very much less than for either amalgam or gold. The cavity should be thoroughly dried. The amalgam should first be mixed and of a convenient sort of consistency. The cement should then be mixed and of a decidedly thin consistency, not much thicker than would be used for fixing crowns. The cavity should then be filled with the cement, preferably by means of the same spatula as has been used for mixing it. Then immediately a large piece of the amalgam should be pressed into the cement, and, by means of a smooth, rounded instrument, should be driven home, working from the center to the circumference, and so expressing much of the cement on all sides. The edges of the cavity should then be quickly cleared of both cement and amalgam, by means of spoon or other excavators, till not a trace of anything is left at any of the edges, especially at the cervical edge, if the cavity is an interstitial one. This obviates the danger of getting the cement exposed on the surface when the work is finished. The remaining cavity should then be filled up with pure amalgam carrying it down to the cervical edge in small pieces with perhaps a trifle more mercury added so as to ensure its going down completely, and then finishing with harder amalgam and squeezing with bibulous paper in the well-known way. A matrix should be used in large composite cavities and may be applied either before commencing to fill or immediately after packing the first pieces of amalgam and clearing the edges. Putting on the matrix after clearing the edges keeps the matrix clean and free from cement.

Cavities for which this composite filling is suitable are practically all those which are generally considered suitable for cement alone; many cases which are generally considered suitable for cement alone, and in addition many which would otherwise be suitable only for gold. All large interstitial cavities in molars and bicuspids and crown cavities which are fit to receive a hard filling at all may with propriety be filled by this method. There is little in common between a filling of this sort and an ordinary amalgam filling. Ordinary amalgam as a filling material is open to many objections which the combination is entirely free from, and the combination presents a number of merits which belong to it alone. Thus, to compare it, point by point, with gold or amalgam: (1) it requires a much smaller sacrifice of healthy tooth substance; (2) it leaves a stronger tooth; (3) it necessitates much less pain in excavating; (4) valuable time is saved in excavating; (5) it interposes a non-conducting layer between the sensitive dentine and the metal; (6) it adheres to the cavity; (7) it is more water-tight; (8) compared with amalgam, at all events, it does not stain the tooth, nor show through the thin enamel of a nasty color, and (9) it is quickly done.

I venture to submit: (1) that all cement fillings in back teeth which we so often meet with as permanencies would be better treated by coating the cement with amalgam in this way; (2) that most teeth which are filled with cement as a trial for a temporary purpose would be better filled as a permanency in this way. Where the cement will be tolerated this combination will equally be tolerated, and whereas it is exceedingly difficult often to pack simple cement tightly against the cervical portion of a deep interstitial cavity it is easy, by means of the amalgam, to drive the cement well home. In passing, I would like to give it as my opinion that the supposed tendency of cement to undergo especially rapid solution at the cervical edge does not exist. The disappearance of the cement and appearance of a cavity in this situation is due to the cement never having been in absolute apposition with the tooth at the point, or to the decay there never having been thoroughly removed. The difficulty of packing plain cement at this point is not, I fancy, generally realized, and lies not only in the remoteness of the situation, but in the fact that a little moisture frequently bedews that part, and that the gum presents a prominent and possibly overhanging edge, which edge, when pressed on, is especially liable to give forth a serous or sanious oozing; (3) that nearly every amalgam filling would be improved by being inserted in this way; I have used this method with gradually increasing frequency since my early days of practice, thirteen years ago, and to-day I hardly ever put in an amalgam without the preliminary adhesive stratum of cement. Of course, care and neatness are necessary in this as in every dental operation, and it does not do to leave a layer of cement outcropping at the edges.—*British Dental Journal.*

ARTICLE VII.

ORAL SURGERY: THEORY AND RESULTS.

BY G. LENOX CURTS, M. D.

Read before Canadian Medical Association.

Theories in surgery, as in finance or government, when founded on insufficient data, are apt to be exploded when an attempt is made to demonstrate their real worth by practical test. For it is undeniable that results are the true criteria of the value of work. A theory which will not at all times bear this test falls.

With general surgery and many of its special branches have been brought to a high degree of perfection, where theory and practice accord beautifully, there are departments of the great work of no less importance than the fields, now cultivated by the medical profession, which are utterly neglected in the teachings of the medical institutions and in the practice of medical men. The physician considers it beneath his dignity to investigate the mouth as an indicator or cause of disease further than to look at the tongue. He will not refer to the teeth lest he may be classed with the "dentists." Yet the mouth, which is the gateway to the alimentary tract, the portal through which passes the food which nourishes the body, would seem to demand his first and closest consideration.

The completeness of the lack of knowledge on the part of the average physician and surgeon, concerning diseases attendant upon or following affections of the teeth, of the effects, near and remote, which such affections may cause in the organism, is appalling. Many times their patients suffer untold agony or endure prolonged illness because of the doctor's ignorance upon these subjects, which should be among the fundamentals. For which, if not all, of this the medical institutions of learning are responsible. In the curricula of many of these the teeth, in spite of all the attention that is given to them and their diseases, let alone their anatomical and nervous relations to the remainder of the economy, might well be foreign bodies. In view of all this, it may not be an unprofitable investment of the time to devote twenty minutes to the discussion of a few reports from a plain record of facts.

Mr. A., aged twenty-eight years (who, up to July 1st, 1894, had been in good health, well nourished, and above the average in physical development), in the latter part of March experienced trouble in the eruption of the right inferior wisdom-tooth.

Examination by his dentist revealed inflammation of the gums surrounding an impacted wisdom-tooth, but not sufficiently developed to lead him to do anything for relief of patient. The first and second molars were in position. Dismissed with advice if trouble continued to call again. Soreness increased until May, when the gum over the tooth was lanced and painted with tincture of iodine. This was several times repeated until June 1st, when an abscess was formed. This also was lanced and treated in like manner until July 1st, when the suffering of the patient caused the dentist to advise the extraction of the tooth, and the address of a professional extractor, whose knowledge of surgery was evinently based on theory, was given. Under nitrous oxide an attempt was made to extract the tooth, which resulted in the removal of the alveolar process on the lingual surface. When the patient recovered consciousness he was assured that the tooth had been fully extracted, and was shown a piece of bone of considerable size that had been taken out. He experienced excessive pain and discomfort from the operation, and there was great soreness, due to the lacerated tissue. Complaining of this, the extractor said it was of no importance, he would be all right in a day or two, not even prescribing a disinfectant mouth wash. Patient noticed considerable excitement on the part of the dentist and his assistant, and recalled hearing, while in a semi-conscious condition, the associate express surprise, which led him to believe that the operation was out of the usual run. For several days the patient was confined to his room, and unable to lie down because of the severe soreness of a bruised back. His jaws became rigid and closed, necessitating the use of a fluid diet. Face was badly swollen and pain increased hourly. On the second day following the operation pus began to flow from the mouth, and the swelling was so pronounced that he again consulted the extractor, who laid the trouble to cold and malaria, and considered the operation a perfect success.

After a week of intense suffering and extreme weakness for want of food, he consulted his family physician, who was unable to relieve his suffering, and advised him to see a general surgeon, who in turn told him he was a subject for the dentist, and that he knew nothing of such diseases. Another surgeon, placing his finger along the inside of the cheek back to the upper wisdom-tooth, which had been fractured during the attempt to extract the wisdom-tooth, said that the whole trouble was there, and again he was referred to the dentist, who ridiculed and dismissed him as before. There was excruciating pain in the region of the right tonsil, which was relieved on opening of abscess. A physician was then called, who admitted his inability to treat the case, and turned him over to a young man with a recent hospital experience, in whose hands he got his first relief.

Pus had burrowed through and formed a large cheek abscess. The patient was now very weak and debilitated, with constant discharge of pus from the mouth. An opening was made through the face in the region of the malar bone, which was syringed daily. Under this treatment the patient improved and the swelling subsided, leaving an opening below and back of the angle of the inferior maxillæ, which was caused by the pus. Through the poison in his system the patient was in so precarious a condition that a consultation was held, and he was advised to go to New York for treatment. With his physician he appeared in my office on December 7th.

Examination revealed a large indurated mass just below the jaw on the right side. Very offensive pus was discharging from the opening betore referred to. The introduction of a probe revealed extensive destruction of tissue below the jaw and extending back to the tonsil, where a hardened substance about an inch in size was outlined. Had not the history of the extraction been so definite, I would have been led to believe that a tooth was lodged there; but we concluded it was a fragment of the alveolar process covered with fibrous tissue, which his physician had been trying to dissolve with medicine given internally. The patient was able to separate his teeth one quarter of an inch, which allowed me to examine the wound where the tooth had been extracted. Pus was exuding freely from this wound of the same offensive character that predominoted. Passing a probe into the wound I found that the alveolar process had been fractured, and that a large opening led to the hardened mass external to the tonsil. The patient was in constant pain, confined largely to the right side of the face, very anæmic and nervous, and health completely broken. An immediate operation was advised. Under an anæsthetic the wound where the tooth had been was enlarged, rough bone due to the fracture of alveolar process and suppurating tissue leading to the hardened mass was curetted, allowing more complete examination for the cause of the trouble, when a steel probe readily detected enamel. I passed an instrument around and behind the tonsil, and gradually dislodged and removed a wisdom-tooth, upon sight of which his physician said, "It would take me a long time to dissolve that with any agent known to medicine."

The abscess under the jaw, which involved the entire cellular tissue was thoroughly curetted, leaving a depression about two by three inches in size with exceedingly thin skin. Packed with gauze and allowed the wound to granulate from bottom. No pus from wound near the tonsil after the operation, but some in outside wound until it was curetted.

Patient began at once to improve on antipyemic treatment and nourishing diet. Several days after the operation, he complained of severe pain extending along the right side of the face. Examination of the superior third molar revealed an exposed pulp, following the extraction of which there has been no return. In three weeks the patient was dismissed, and with no deformity from the operation and no return of trouble.

It seems reasonable to me that when the dentist attempted to extract the tooth, instead of grasping it he bore down upon its masticating surface with the point of the forceps, forcing the tooth through the alveolar process, which was fractured, and crowded the tooth behind the tonsil, where it was found embedded. I am told by the patient that since the extractor learned of the removal of the tooth he stated that he thought the patient had swallowed it, and did not dare to acknowledge the facts, preferring to cover up the wrong-doing by saying he had extracted the tooth and it had been lost among others in the cuspidor.

Mr. B., aged fifty-five years, suffered from neuralgia, which the dentist thought was due to abscess of the inferior left central incisor, and inferior left molar, which were pulpless. These teeth had been under treatment for some time, but resisted all efforts to be cured. On examination the upper arch was found edentulous, the patient wearing artificial teeth. Examination of diseased inferior incisor revealed a canal thoroughly opened, and a fistulous opening through the gum at the end of the root, through which a probe showed extensive absorption of the bone. The left lateral and cuspid teeth were found to contain decomposed pulps, and a probe could be passed from the fistula back to the bicuspid below the ends of the roots. The molars were also abscessed, with a fistulous opening through the gum on the lingual surface.

The posterior canal was opened through the apex, and the anterior buccal canal was partially entered and plugged with bamboo. Inferior wisdom tooth lost. On November 27th, 1894, the central incisor canals were cleansed, sterilized, and filled to the apex with chloropercha.

The canal in the lateral incisor was opened freely and drilled nearly to the apex, but I was unable to get nearer than a fraction of one-sixteenth of an inch from the apex. Sterilized and filled with chloropercha. Patient was referred to dentist for removal of gold crown from cuspid root, which was abscessed, and to report on Saturday. On that day examination revealed the removal of crown; the canal of the cuspid was more fully opened into and dressed with creosote.

On December 1st, canal of cuspid was more fully opened and a probe passed beyond the apex. Canals sterilized and filled with chloropercha, some of which oozed out through the apical foramen. Cocaine was injected into the gum and alveolotomy performed. Chloropercha oozed out through the wound. Cavity in alveolar process around cuspid and incisors burred and curetted. Debris washed out and wound sterilized. December 3rd, the gums over the cuspid found considerably swollen. Wound opened with probe and tincture of iodine injected. December 5th, gums found less swollen and less inflamed. External application of iodine. Anterior buccal canal of molar opened to apex; also posterior canal more freely opened to apex. Search for lingual canals, from which the abscess started, resulted more favorably after drilling considerable dentine away to the floor of the pulp-chamber. Canals found to be small and almost closed by deposit of secondary dentine, but larger upon opening into them. Both were opened to the apex, so that a delicate probe passed beyond. All four canals were flooded with carbolic acid; ropes of cotton were packed in and sealed for the purpose of disinfection. Two hours' time was occupied in opening these canals. The following day the canals were packed with iodoform. No unusual disturbance around tooth. December 7th, all signs of inflammation had subsided and the teeth were entirely comfortable. The canals were dried and filled with chloropercha, which was forced through the apical foramen of the distal canals, and oozed through the fistula in the gum. The floor of the pulp-chamber was carefully lined with gutta-percha and the cavity filled with cotton. Case referred to dentist for filling. Under cocaine alveolotomy was performed, abscess and debris burred and curetted; wound washed out with electrozone. Wound dressed daily for several days with disinfectant and tincture of iodine. Patient complained all the time of severe neuralgic pain in the left side of face, more especially when tired or at night. I directed the dentist's attention to second left inferior molar, which was very sensitive, owing to abrasion and its having been ground down so as to make the teeth on the plate above occlude properly. Advised to look for irritation of pulp. This advice was not considered good to the extent of investigation. December 19th, after an exceedingly restless and painful night, patient consulted family physician, who bitterly censured the advice and operations of the dentist and of myself, and demanded that he immediately go to a professional extractor and have the teeth drawn, leaving the posterior molar untouched. It was no easy task for me to dissuade the patient from acting on the physician's advice. Again I repeated the necessity of care of back molar; I also opened through the gum and curetted around the anterior buccal root of the first molar with a view to blood-letting and to relieve light congestion around tooth, and also in the pulp of back molar. The pain continued, and the dentist reluctantly saw the wisdom of opening into the second molar, which revealed four pulp-stones about the size of a pin's head as the cause of the trouble, on the removal of which, along with the entire pulp, all pain disappeared and the patient was rendered comfortable. Since this treatment patient has enjoyed best of health.

Mr. D., aged thirty-four. For ten years or more had dull pain in upper right half of face, sometimes extending to side of head with soreness in upper jaw before malar bone. About seven years prior he had the first superior molar extracted, since when he noticed an opening through the gum in the neighborhood of the affected tooth, through which pus discharged. All these years he at times had very heavy dull feeling in the right side of the face, in the nose, and under the eye, which would leave the eyeballs sore and tender. A pain sometimes ran down the right arm and side of the chest, resembling that of rheumatism. For one year he had continual sharp pain in the left side of the face and in the eye, which on any quick movement of head or an attempt to read rendered him dizzy so he would stagger. When apparently free from pain a quick turn of the head would cause it to reappear. Neither physician or dentist could point out the cause of the trouble, but advised the extraction of the second bicuspid on the affected side, where the pain centered, and an attempt to do so resulted in the fracture of the root, when, in order to get the pieces, nearly the entire alveolar process surrounding it was cut away. The wound was a long time in healing, and the neuralgic pains continued just the same. One of the surgeons whom he consulted gave him a placebo; from which I inferred, as did the patient, that the surgeon took his case to be one of hypochondriasis.

He appeared at my office with the history given above. Examination of the right side revealed a fistulous opening posterior to the second bicuspid, which would be exceedingly difficult for inexperienced eyes to detect, as there was no inflammation or hypertrophy surrounding it. A delicate probe was readily passed through it and into the antrum. The removal of the probe was followed by a straw-colored fluid, leading me to the belief that bone disease existed. I found that all the alveolar process anterior to the second molar roots and first bicuspid, save sufficient to hold that tooth in position, had been destroyed. The destruction extending to the lower border of the malar bone and floor of antrum. Within that area it was completely gone. The hard palate opposite the extracted tooth was necrosed for half an inch and a sequestrum about one quarter of an inch in width, held and supported by a narrow neck, was forming at the line of demarcation. The second bicuspid contained a putrescent pulp, which when opened was exceedingly offensive. I concluded cause sufficient for disturbance on the right side of the face had been detected. The symptoms on the left side were then looked into. The left half of the upper lip was swollen and inflamed, especially so at night, bothering him in talking and eating. A notable condition in the expression of that half of the face was the want of normal fullness showing a long-continued irritation of the nerves which supplied the muscles, which had resulted in their being atrophied, save those of the upper lip; even a change in the size and expression of the eye was visible. During the examination he had many paroxysms of pain. The inferior left wisdom-tooth had been extracted. The teeth in upper jaw excepting the first molar had a normal appearance. The wisdom tooth was elongated from lack of occlusion, and the gum around the same was slightly inflamed. Percussion of the teeth produced normal notes save in the first molar, in which the discord was very faintly heard, there was no soreness of tooth, but a change in the expression of the eye led to the belief of pulp-stones occupying it. There was also faint discoloration. The mesial buccal root was slightly denuded of gum tissue, due to extraction of the bicuspid and the injury to the gum. The cementum of the denuded root was not sensitive to any of the usual tests made, and I decided to open through the side of this root with a small drill to ascertain its vitality. The canal was entered with no visible signs of a pulp. No odor present to indicate that it was dead. I passed a flexible bristle to the apex of the root without resistance. A drop of blood was drawn from beyond the apex. A large opening was then drilled through the masticating surface of the tooth, and the pulp chamber was fully exposed and found to contain three large pulp-stones. One covered the canal of the palatal root, and upon its removal the entire pulp of that root came away attached and completely ossified except a sixty fourth of an inch at the apex. Its removal was followed by a gush of blood.

The cure was like magic. The patient's general impression changed instantly, as if he had been freed from captivity, and he exclaimed : "Why, what have you done? The pain has gone; I can turn my head quickly without causing pain." Believing this statement to be true, and to immediately make further test, I said, "Perhaps it is only mental relief," upon which he remarked, "Mental or not, there certainly is a change, and I am free from pain"; and this condition has proved to be lasting, as well as true. All three canals were opened to the apex, filled with wax, and left for the dentist to finish. The patient reported having had the first night of uninterrupted sleep in over a year, with no pain. He also had been able to read without vertigo, and he very much enjoyed the ability to move his head quickly without anticipation of suffering. Not finding indications of pulp-stone in the wisdom-tooth, and it being no practical value to the patient, because of the loss of the antagonizing tooth, I extracted it with the view of examining the pulp, and thus prove tests of diagnosing pulp stones; and was gratified on opening the tooth to find a normal pulp. This is contrary to theory by surgeons who claim that pulp-stones only appear in teeth that have lost their antagonist. Thorough cleansing, sterilizing, and filling of the canals of the bicuspid in the right side followed, Examination of the antrum did not reveal a purulent condition, only a chronic inflammation. The discharge of pus was from the necrosis of the palatal plate. The operation consisted of burring away the sequestrum, abscess sac, and granulating tissue, curetting and removing same, and douching both the alveolar cavity and antrum with peroxide and bichloride solutions, and repeating the bichloride twice daily for forty-eight hours. Ten days later the report from the patient was very favorable, no inconvenience whatever having been experienced. This is one of many cases with such satisfactory results.

Another typical case bearing on the subject in hand is reported to me by my friend, Dr. Ives.

A lad, twelve years of age, was brought to him November, 1894, for dental operation. Examination of the mouth showed an over-crowded arch, resulting in irregularity of the teeth, which were very poorly calcified, and contained many sensitive cavities. In the inferior first molars were extensive amalgam fillings and several disintegrating spots. The pulps of the superior first molars were dead, and in reply to an inquiry as to why the lad wore glasses, his mother said, "By order of his physician, under whose care he has been for a long while for treatment of 'St. Vitus' dance of the eyes.' " The boy's eyes, lids and brows were rapidly and constantly twitching, to the great discomfort of himself and those aboat him, and he was nervous and irritable. Dr. Ives's experience enabled him to quickly see the relation between the boy's trouble and the condition of his teeth, and he directed that he be taken to Dr. Hasbrouck for the extraction of the four sixth-year molars, with the assurance that the extraction would cure his "St. Vitus' dance." This was done, and at the expiration of ten days the boy returned, without glasses, and all signs of irregular movements about the eyes had disappeared. The boy was then taken to the physician, a well known oculist of good repute, with a statement of what had been done, but he repudiated the idea that the change was owing to the extraction of the teeth. "It was impossible," he said, and claimed that the cure was entirely due to his own treatment.

These cases point to the idea previously expressed of the lack of appreciation among members of the medical profession generally, of the important *role* which the condition of the mouth and teeth, more especially the latter, plays in disease. They can be duplicated by the dozen, but hundreds, alas, of the sufferers from the protean effects of unsuspected dental disease never find relief because of the ignorance of their physicians. There are many cases, again, when the dentist discovers the cause of the trouble with the patient's general health, but he is overruled by the physician, whose authority and knowledge are supposed by the patient to be supreme.

Few, perhaps, have better opportunities than I to see the evils which flow from the physician's ignorance upon the subject of the teeth. The physician, in formulating his theories for the explanation of obscure troubles, entirely ignores this factor. He has never been taught to appreciate the teeth as a possible element in any disorder, except toothache, or perhaps a neuralgia of the face. The medical schools are no aid to him, the text-books give no inkling of the teeth. The teeth are the province of the dentist, and the dentist is too often looked upon with contempt by his medical confrere as being a one-sided, semi-educated man, when really this very one-sidedness has made him a master in oral and facial diseases. Upon these points the dentist does not vainly theorize. He gets results, and these results are his recommendations to the medical profession.

It seems to me that in this day of enlightenment upon the teeth among dentists, it is almost criminal in the medical institutions of learning to send their graduates out with less than half the knowledge which should be given them. If this be so with regard to the college, what shall we say of the man, who precticing the most beneficient profession in the world, fails to acquaint himself with a subject so important to the sound pursuit of medicine? Is he not lacking in his duty to himself and to his patients? With so important a factor, in many cases entirely omitted, can he do more than vainly experiment upon his patients, blindly grasping for what he has not eyes to see?

I have no objection to experiment with patients, with a view to further enlightenment, provided it is done honestly and with all the possible known elements estimated at their true value. But when experiment is necessary because the physician or surgeon lacks common practical knowledge which he can easily avail himself of, I cannot uphold it. Such a course must necessarily be merely mercenary. A theory formed by such a man must be wrong, his practice cannot help being mischievous, his results, so far as good is concerned, will be nil. He is simply a "guesser," and while he is guessing his patient's life may be slipping away.

It behooves us, then, to endeavor by every manly means to free ourselves from every environing circumstances which tends to cramp our efforts to relieve human suffering. What we are after are results, not theory. As we can learn industry from the little busy bee or patience and perseverance from the spider, so we may even learn from the dentists the relations of the condition of the teeth to apparently unrelated lesions. Certainly we should neglect no source of information which would strengthen or enlarge our means of fighting disease. So, and so only, shall we be able to confer upon our patients the highest benefits within the limits of our profession.—*Dominion Dental Journal.*

ARTICLE VIII.

INCIDENTS IN OFFICE PRACTICE.

BY G. V. N. RELYEA, L. D. S., OSWEGO, N. Y.

Stratagem at times is as necessary in dentistry as in war. A patient called, when the following colloquy ensued: "Some twelve or fourteen years since you filled these front teeth with gold, and they are so nice that I will have nothing but gold in my mouth. My eye tooth is decayed, and if you think it will reach the nerve I will not have it done, but instead will have it extracted. You once killed a nerve for me, and it almost killed me."

I examined the tooth and assured her that it was not very bad, it would not reach the nerve. I commenced to excavate, and doing it carefully had it, as I supposed, ready for the filling. On close examination, however, I saw the pulp shine through the thin wall and at once abandoned the idea of filling with gold. In my palmy days, when I was ambitious, I would have considered this a grand opportunity for capping. In this case there were potent reasons for not adopting it, and in a future article I will give my experience about capping; when and why—when not and why. To tell her the real condition would have involved objections, explanations, etc. In such a case I retire for deliberation, and in this instance came to the conclusion to ask for time. The gums had been somewhat wounded and I advised her to defer the operation and let the gums heal. Then I applied my devitalizer and covered it securely with a four per cent. cocaine. In two days I was to see her again. At the next sitting she reported no pain. On examination I found the pulp devitalized and no inflammation. Quietly and without creating any suspicion I gently removed the pulp almost to the apex, then forced pure wood creasote up and advised a temporary filling, and she could have a gold filling later. When next in the chair I showed her the filling, which was white amalgam, and said why not leave it as it is, it does not show from the outside and it will save you several dollars, to which she gladly consented. I then told her about my destroying the nerve, removing it entire unknown to her, and such a blank, disappointed expression you can scarcely imagine. I have written this for the benefit of young operators.—*Dominion Dental Journal.*

ARTICLE IX.

A PROFESSIONAL WARNING.

BY MARK G. M'ELHINNEY, D. D. S., L. D. S., OTTAWA, ONT.

Read before the Ottawa Dental Association, Jan. 12th, '97.

The professions of medicine and dentistry are divided into two great classes, legitimate practitioners and quacks. Each of these professions, as the result of long experience, has accumulated a set of rules, written and unwritten for the guidance of its members. These rules enjoin those lines of conduct that will conduce to the best interests of the practitioners, and ensure protection and the highest class of service to the public.

Those members of a profession who observe the the spirit of these rules are looked upon as legitimate practitioners. Those who disregard the rules are called quacks. Nearly all start out in the legitimate line, but bad fortune, inability to face the long and weary struggle of practice building, bad counsel or example, desire to grow rich rapidly without considering the means, and many other causes weed out a percentage and send them forth to prey upon the world as quacks. Very few quacks succeed in making a brilliant success, for it requires a superlatively clever man to fool the public for any great length of time—the remainder of these sink lower and lower until they become mere street-corner fakirs. The quack holds the same relation to the legitimate practitioner that the tinker does to the skilled engineer, the scab to the honest skilled laborer, and the tramp to the reputable citizen. The quack is a professional tramp. The quack may be, in fact frequently is, a skillful man; there have been Napoleonic fakirs in all lines of life, but his methods are not those best calculated to ensure the best welfare of his patients.

There are several reasons why itinerant practitioners, even if skilful, cannot give as good services as regular practitioners. The itinerant has no fixed place of business, no regularly equipped surgery and laboratory. He must put up with the various inconveniences and annoyances of temporary quarters, consequently his services must vary with his circumstances. The quack, in moving from place to place, trusts to his advertising for patronage and does not gain permanent patients, hence it matters little to him what may be the result of his work, for he has no reputation to preserve or character to protect. The quack often, nay, nearly always lays claim to skill far beyond the range of the regular dentist or physician. A moment's reflection will show that a person possessing such superior skill and powers could attain fame and fortune legitimately in any great city and must be a fool to turn peddlar and give his services at half price. The quack having obtained his dupes' money, wishes quickly to be rid of them, and does not care what future trouble may ensue, hence it is positively dangerous to engage the services of such totally irresponsible persons. A case in point—several years ago a dentist came to Ottawa equipped with a brass band, a variety troupe and electric light. He sold patent medicines and extracted teeth by the thousands. Between the distracting noise of the band and the effect of a powerful drug contained in a bulb on the handle of the forceps he actually extracted a large number of teeth in a painless manner. What was the result ? A large proportion of the teeth were broken in the rapidity of the operation, the victim being hustled down too quickly to discover this or make protest. A large number of good teeth were sacrificed, the extraction of which was little short of criminal. The last and most serious result was the subsequent inflammation and sloughing caused by the drug or some of its constituents. There were many cases of serious inflammation and suppuration, and in at least one case the victim was in danger of losing the whole lower jaw through caries. Such are the unlovely results of such wholesale malpractice.

The claims of these men to superior skill and special knowledge are totally unfounded. Each and every dentist in Ontario must attend the Royal College of Dental Surgeons for the full course and must pass the prescribed examinations. The opportunities for instruction are equally open to every student. Every effort is made by the professors to obtain the very latest methods and most modern appliances, and no improvement can exist for any length of time without its advent becoming a matter of discussion in the dental journals, which are widely circulated and read by professors, students and practitioners. There are no trade secrets in dentistry. Individual variations in method are many, and of these any practitioner may choose that best fitted to his requirements, but the system of modern dentistry in all its intricacy is the common property of the dental profession. Our surgeries and laboratories are ever open to our brother practitioners, and at our meetings together we exchange and discuss our ideas and opinions, and above all, what characterizes most dentists as men of liberal and scientific spirit, is that any one who makes an improvement or discusses a new fact immediately calls his brethren together and gives them the benefit of his good fortune. Is it reasonable to believe that an itinerant tooth-puller could by any possibility possess knowledge that could remain hidden from a numerous and educated profession that singly and collectively is continually striving for higher and better attainments?

The claims of the quack are based as much upon his own ignorance as upon his knowledge of the gullibility of human nature. It was not long ago that a young man called at the writer's surgery and endeavored to sell a secret method in connection with crown and bridge work. He was surprised to find that the writer had been shown the same method by another older practitioner in this city, and that in all probability the method is in the possession of almost every member of the profession to-day. In addition, the method is one of minor importance, suited only to occasional cases and more a trick of manipulation than any real improvement in result.

The possession of the degree in dentistry is sufficient evidence of average ability, which is all that average recompense calls for. It may be held that the regular practitioner is afraid that he will lose money if the public patronize itinerant operators. There is also something in this, for the resident practitioner pays rent and taxes, and otherwise contributes to the general prosperity of the community, and the better the public supports him the better services he can render. Every professional man spends much time and money in adding to his knowledge regarding difficult points in practice, and frequently on an especially difficult case he may spend ten times as much as that case can repay. The writer is aware of more than one case where the practitioner, for the sake of the patient, for the sake of his own reputation, and for his own professional satisfaction, brought it to a successful termination at an expense not only far beyond anything received in fees, but owing to fewness of such cases beyond any possibility of future remuneration.

It has been charged that we labor only for the almighty dollar. Were it not for necessity it is probable that many of us would not be in the profession; but once in, it is a poor and mean individual who does not develop some interest in the welfare and advancement of his chosen calling. Cheapness is the great bait held out by quackery. Mean and ignorant persons imagine that they have done a smart thing in saving a few dollars in medical fees, even if they have, by resorting to quackery, lost the life of a wife or child. It is the same in dentistry. The same people will stop at half a dollar in the price of a filling, even when it may mean the loss of a tooth which is a vital necessity to health and comfort. Even if the quack rendered equally efficient services, which cannot for a moment be admitted, it is a manifest injustice to extend to him the patronage that rightly belongs to the resident practitioners, for to them all other members of the community are more or less indirectly indebted as members of the same social arrangement.

In some of the smaller towns and villages where the population of each is not sufficient to support a resident dentist, it is necessary for one to visit them at intervals, but this practitioner always has an established headquarters and does not come under the definition of a quack. Some of the most reliable men in the profession have practice of this description. They have a clientele in each place, and are as careful of their pofessional reputation as any of the resident dentists of a large city. The advent of a quack always results in the regular dentists being crowded by a lot of difficult and unsatisfactory cases for which equivalent remuneration is very difficult to obtain. The cases consist of misfitting artificial teeth, uncleanly crowns, roots left in during careless extraction, inflammation from use of powerful drugs, and sometimes even fracture of the jaw from brutal manipulation, and blood-poisoning from the use of uncleansed instruments. Imagine for a moment the extraction of hundreds of teeth in an evening without even wiping the forceps, as the writer has actually seen take place. What a splendid opportunity for the wholesale dissemination of syphilis and kindred diseases. This sort of thing is criminal, and should entitle the perpetrator to a term of imprisonment that would teach him not to indulge in malpractice. The serious results that may follow the use of unclean surgical instruments are not half appreciated by the laity. Ask any physician, and he will say that since the advent of antiseptic surgery the mortality from surgical operations has decreased to an astonishing degree.

It is a fact that the existence of syphilitic virus in the first of one hundred patients operated upon consecutively with unclean forceps could entail life-long misery upon the other ninety-nine, not to speak of transmitted disease through countless generations of their posterity. The dentist who for a greatly reduced fee is compelled to handle too many victims in a given time to make a living, has not time left to attend to such a small, though important, matter as the cleaning of instruments. He is forced to leave the debris, and perhaps deadly poison, of the last operation in the mouth of the patient next following.

There is no doubt that a restaurant keeper who took no time to wash dishes and table linen could provide meals for a few cents less, but how many customers would he get even in the slums ? Yet in a matter of a thousand times more importance some people, for that few cents, will run the risk of misery and even death itself.

A great many would-be wise persons refuse to be warned that the services of the cheap john are most expensive in the end, and like the people described in the legend of the Noachian deluge, keep right on to destruction. Be that as it may, the profession, in sounding many a note of warning, has the satisfaction of knowing that it has, as far as lay in its power, done its duty.—*Dominion Dental Journal.*

ARTICLE X.

THE CARE OF THE TEETH.

BY F. H. FUNSTON, M. D.

No meal should ever be partaken of without immediately thereafter rinsing and washing the mouth with clean, clear water, if nothing else, and obviously the addition of some pleasant antiseptic, like euthymol, is preferable. So, too, this act should be succeeded by a thorough scrubbing of the teeth with a moderately stiff brush, passed both laterally and perpendicularly over front and back surfaces alike; not even the most microscopic quantity of food should be allowed to remain in the interstices of the teeth or about the gums. Such a measure, if carefully carried out with the aid of a strictly antiseptic dentifrice, will prove not only a means of warding off offensive breath and the many maladies common to the gums and teeth, but will speedily eradicate tartar and retracted gums.

During the last half-century dentifrices have multiplied by thousands, each presenting its own peculiar claim. Some are really valuable; others are harmless; not a few are dangerous. In the latter connection, too great stress cannot be laid upon the fact that any article intended to be utilized for the toilet of the teeth, and which presents an acid or markedly alkaline reaction, is to be regarded with suspicion; it may be added that a number in the market are neither more or less than dilute solutions of spirit of salt (muriatic acid), which is almost rapid in its action upon enamel, and moreover promotes decay and tends to produce offensive exhalations. Others are little more than pleasantly flavored soap; but if the latter ingredient is good and pure it cannot be considered objectionable. Tooth powders, too, which sometimes accompany fluid dentifrices, must also be looked upon with suspicion, as they not infrequently contain ingredients that may prove detrimental. And it may here be remarked that those applications for the teeth which are warranted to immediately whiten are always dangerous, inasmuch as they rely upon strong chemicals for their action.

A recent improvement in this line is euthymol tooth paste, which, as its name indicates, depends in large measure for its value upon euthymol, a preparation that has long been employed by surgeons wherever perfect antisepsis was desired, and has moreover deservedly gained universal popularity because of its freedom from danger except to germ life.

To the mind of the writer this preparation warrants specific mention inasmuch as it offers the ideal of a dentifrice in that it is at the same time a powerful antiseptic, reasonably detergent, modest in price, pleasant in odor, and exceptionally grateful to mouth and gums, while last, but not least, its use affords a positive protection against foul breath and other conditions peculiar to the mouth that lead to retraction and softening of the gums, staining of enamel, formation of tartar; it is likewise a reasonably certain guarantee against a number of diseases which gain entrance to the human organism through germs in the mouth and digestive organs.—*Popular Science News.*

Communicated.

THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The fourteenth annual session will be held in the parlors of the "Hotel Chamberlin," Old Point Comfort, Va., Friday morning, July 30th, 1897, ten o'clock, and continue in session (with the exception of Sunday, August 1st) until adjournment. Matters of the greatest importance to the Association will come before this meeting, and it is hoped every member of all the various State Boards will be present.

"Hotel Chamberlain" and "Hygeia Hotel" rates will be $2.50 per day, two in a room; $3.50 per day, one in a room.

Fare from all points on all the railroads will be one and a third; take your receipt from ticket agent when purchasing ticket. The Old Dominion Steamship Co., Pier 26, North River, New York, will sell excursion tickets, including meals and berth, for $11.20, sailing Thursday July 29th, 3 p. m.

CHARLES A. MEEKER, D. D. S., Sec'y,
29 Fulton street, Newark, N. J.

AMERICAN DENTAL ASSOCIATION.

The thirty seventh annual session of the American Dental Association will be held at Old Point Comfort, Va,, commencing at 10 A. M., on Tuesday, August 3rd, 1897.

GEO. H. CUSHING,
Recording Secretary.

Editorial, Etc.

IMPRESSIONS OF MODELING COMPOUND.

Dr. W. E. Robertson, of Alvarado, Texas, suggests the following method for perfecting impressions of modeling compound :

Secure the impression in the ordinary manner, and after removal from the mouth, and when it has become quite hard, trim off any surplus until it corresponds to the shape of the rubber plate or base to be constructed.

Then hold the inner surface of the modified impression over the flame of a spirit lamp, or Bunsen burner, until the surface of the impression only is softened, but not the main body of the impression. Then return the impression while it is warm to the mouth, and after firmly pressing it home, allow it to harden before removing it.

Dr. Robertson claims that such a method will give more satisfactory results than the ordinary manipulation of modeling compound.

Bibliographical.

"Transactions of the New York Odontological Society for 1895." Publishers : J. B. Lippincott Company, Phila.

The interesting and instructive proceedings of this noted Society appear in an attractive form, and afford an evidence of the energetic and successful management of an association of dentists famed for their progressiveness.

"Dental Chemistry and Metallurgy. By Clifford Mitchell, A. M., M. D. Fourth Edition. Publishers ; The W. T. Keener Company, Chicago.

The first edition of this work met with the approval of the dental profession, and proved a valuable aid to the student. Every succeeding edition has met with a still higher appreciation, and this new (the fifth) edition cannot fail to receive a more welcome reception even than any of the preceding ones. It is certainly abreast of the times, and the endeavor of its author to provide a course which shall include a large number of exercises in experimental inorganic and organic chemistry is manifested by the addition of more than one hundred new pages. The contents of this new edition also embrace physiological chemistry in which the process of digestion is considered at some length, thus affording a valuable addition to the treatise. The germ theory also receives greater attention, as well as new alkaloids and antiseptics, all of which add to the value of this treatise as a dental text-book for the student.

Monthly Summary.

DENTAL OPERATIONS DURING PREGNANCY.—By Dr. H. J. Custer, Johnstown.—Several years ago a young married lady of lymphatic temperament presented herself in order to have a superior lateral incisor filled with gold. Nothing was said regarding her condition, but circumstances indicated the first weeks of pregnancy, and a cement filling was accordingly advised.

The patient insisted on a gold filling, which was finally agreed on. The cutting of the sensitive dentine apparently caused but little pain, in fact, the several steps of the operation were accomplished with but little discomfort till a finishing strip was introduced, when the first and only rasp caused a momentary muscular paroxysm. After a few moments' interval the filling was completed by the aid of disks, and the lady left the office without much depression and well satisfied with the operation. However, the second day after the operation uterin contractions were established, and after several days of rather serious illness an abortion of about the tenth week was completed.—*Welch's Monthly.*

SWAGING PLATES.—By J. Y. Crawford.--I recommend the recent developments in swaging metal plates over a plaster die; it can accomplish results that are perfectly marvelous. Nothing can proximate a lower plate of aluminum, swaged over a plaster die, with rubber attachments. It goes in like a wafer, and there will be no ulcerative absorption in the lower jaw. If the teeth are imperfectly occluded, the lower plate moves and slips about, and hits the mucous membrane here and there till the tissues become hypertrophied, and finally there remains only a soft bed for the plate to rest on. But there is less absorption under an aluminum plate swaged between two metal surfaces and driven home on a plaster die; it fits so beautifully you can bring out the rugæ in an upper plate. You have all seen those soft, mushy jaws, where all the anterior part is like a second tongue; but you will have no more of that if you will adopt the swaged aluminum. I earnestly recommend the process of swaging metal plates over the plaster die, and assure you you need not break the model.—*Welch's Monthly.*

A LIGHT ARTIFICIAL DENTURE.—By Dr. W. H. Todd, Columbus, Ohio.—After you have carved and prepared the plaster model as the mouth would indicate, it should be painted with a thick shellac varnish and covered, where you want the plate, with Japanese lead (lead foil that comes in chests of tea). Be sure to have the foil burnished on the model, so that every inequality is shown. Now get the articulation as usual. If you wish to try in, take a piece of hard base plate and cut it short of the alveolar ridge, so that when the teeth are set up it can be cut out, leaving the teeth standing. Mount the teeth and try in, if all right cut out the hard base plate as close to the pins of the teeth as possible, replacing the base plate with a plate of Japanese lead, using two or three pieces, according to thickness of plate required, smoothing up next to the teeth, also the rim, with wax, just as you want the plate when finished. Then take another piece of Japanese lead and cover the entire palatin portion and rim of plate to the teeth, always burnishing each piece down close.

The last piece cover with shellac varnish so that it will adhere to the other part of the flask, then flask up. Warm before separating; take out the middle pieces of foil and wash out with hot water. Use a piece of chamois skin and a little mercury, and proceed to polish the foil in both halves of the flask till it is as bright and smooth as glass, then you are ready to pack, using the toughest rubber you can buy.

When you take the plate out, you will have nothing to do but trim the edges and brush on the lathe, the result being the lightest, toughest and thinnest plate made.—*Ohio Dental Journal.*

SPACE IN FILLING.—Dr. Arthur B. Freeman: Dr. Brophy says that in filling proximal cavities, wedges should be placed between the teeth for several days. That occurs to me as being a mistake. When I entered the profession, some sixteen years ago, this was a common practice, and for a time I indulged in this method myself, but have discarded it for many years, believing that it is a mistake to subject patients to the soreness which necessarily follows wedging. The pain of introducing a filling when a tooth is in this tender condition is terrific, to say nothing of the injury often done to the process and other tissues. Dr. Brophy did not place any limitations on the statement he made, so I took it for granted that he wedged for several days, and followed immediately with the filling.

Dr. Truman W. Brophy: I did say that who ever made a critical examination of the proximal surfaces of teeth must secure space, and I am not one of those who believe in adjusting appliances and rapidly crowding the teeth apart. I have seen too many bad results from that kind of treatment. I am satisfied it is not possible in many cases to make a good proximal filling without securing space. Many times where caries is extensive the teeth will interlock, one will drop into the other. If you apply a separator between teeth of this character and attempt to crowd them apart, you subject the patient to more pain than if you were to use wax tape and pry them apart. You may take two or three days to do it. If you do that it will not cause any discomfort, whereas, if you resort to immediate separation you will injure the parts and the injury cannot be overcome by the lapse of time.—*Dental Review.*

ABSORBED RIDGE.—Where most of the alveolar ridge has been absorbed—especially the lower—it is often difficult to keep the plate in place, but a firm adhesion may be obtained by the following method:

After your plaster model is nearly dry, mix some plaster very thin, and with a fine camel's-hair pencil, build up a half round ridge, about the width of an ordinary knitting needle, all along the highest part of your model, or what is left of the original ridge, leaving off about a quarter of an inch from the end of the previously marked-off plate, on both sides, or the object will be defeated. Never wet the model, or your plaster will run where it is not wanted, while, when dry, you can guide your plaster with the pencil and build up a neat and even ridge; a very important point in taking the model from the molding sand afterward. The work should be performed neatly and rapidly, adding a little material at a time, till the ridge is finished to your satisfaction; when finally your plate is struck up, and while trying it in, you will be surprised to find how firmly it will adhere, by means of this narrow and continuous air-chamber.

The same process will hold good in rubber plates, but the model should be more thoroughly dried, to prevent the sticky base-plate from injuring the ridge. For troublesome shallow plates, already in the mouth, we would suggest the forming of a hollow ridge by means of an engine bur. We have used this process for lo! these many years, and have always found it a success in even the most desperate cases.—J. DIENELT, in *Office and Laboratory*.

AN IMPRESSION AND ITS TESTS.—By C. A. Devin.—A perfect impression must have fullness, smoothness and sharpness. It should cover a little more surface all around than the finished base-plate; should faithfully reproduce all the finest lines, and should be as smooth as the mucous membrane. The sharpness is required not only to attain the best adhesion, but to counteract as far as possible the blunting effect of cast varnish. Smoothness is necessary to the health of the surfaces against which the plate rests. A full impression adheres to the part it covers, either because the air is excluded from under it, or on account of alveolar undercuts, or because by being left in too long it has absorbed the moisture from the mucus membrane. The latter effect is generally caused by ignorance or carelessness, and usually injures the mouth. The resistance which occurs from pressure of the atmosphere against the under surface of the cup, showing that the air is excluded above, can always be relied on as the certain test of a good impression. The resistance which is offered by an undercut can easily be distinguished from that of the atmosphere, and is nearly always felt after the latter has been overcome. Of course it is admitted that an impression which drops when touched or is detached with very little force may be so modified as to produce a plate with fairly good adhesion; but such an impression cannot be considered reliable, and in difficult ones it is almost wholly worthless.—*Dental Journal.*

EUCAINE.—By Dr. Watkins.—Eucaine comes in the same form as hydrochlorate of cocaine, and requires to be prepared in distilled water, then boiled. You set it in a tin basin of water and boil it. Then you have it pure and free from germicides. Wipe the gum clean with a weak solution of carbolic acid and you will be introducing no poison, and will create no inflammation. Eucaine, unlike cocaine, will keep indefinitely; it will keep till it is used up. You can inject a five or ten per cent. solution into the gum each side of the root; only a short time is required for its effect; from three to five or eight minims is a sufficient quantity, and you can extract the tooth usually with no pain. It has worked better in my hands than any other preparation that I have tried. The other day I had a case to prepare for an upper and under set, nothing but roots to remove. I made two injections, first from one wisdom tooth to the central, then extracted all the roots on that side; then injected from the other wisdom tooth to the central, and extracted on the other side. There was no pain except in the removal of each of the wisdom teeth. Perhaps I did not introduce quite enough of the remedy, or did not leave it long enough at that point. As to the rest, the patient said it was without pain. I have used this eucain in quite a number of cases, and it works nicely, seems to be harmless, and leaves no sore mouth afterward.—*International.*

CARBOLATE OF IODIN.—By E. G. Betty.—Its prepara-is at once simple and ready and should be done just before using. To about two or three ounces of distilled or filtered water, which has also been boiled, but reduced to 100 degrees F., add first ten or twelve minims of Calvert's crystallized carbolic acid No. 1, then the same quantity official tincture iodin. Stir this up by filling the syringe bulb and injecting back into the glass. The muddy color of the iodin will disappear, with an apparent evolution of gas. A peculiar odor is at once perceived, entirely different from that of either of the principals. When gingival inflammation is present, use as hot as the patient can endure; and for all purposes it is well to use it quite warm.

I have found this far superior to listerin, boracic acid and all that class.—*Review.*

GALVANIC ACTION IN THE MOUTH.—I have often heard of galvanic action of metals in the mouth, but the most complete battery I ever heard of, I produced in my own mouth. It may be interesting to others to have a history of the case.

My first molar was a wreck, so I took an aluminum crown, cut top off, and slipped the band to place—packed asbestos in bottom of cavity and then contoured it up nicely with alloy. The tooth looked well and the articulation which I sought was perfect. The adjacent bicuspids were gold crowned, as well as the first molar and second bicuspid below.

I thought it a success until I came to close my mouth, and then I found that I had a perfect galvanic battery. All was well when my mouth was open or when firmly closed—but when the teeth were nearly closed I received the shock. I endured it for an hour or two and then I slipped the band off and all was well again, except that the second bicuspid crown had changed in color to perfect aluminum, and was with difficulty restored.

The aluminum was the exciting cause, but the query is, would the effect have been the same had I left out the alloy and used the aluminum crown in the usual way?

DIFFICULT PARTIAL IMPRESSIONS.—By Homer Heberling, D. D. S., Lehighton, Penn.—Several weeks ago a lady presented, desiring a partial upper denture. An examination of the oral cavity revealed a V-shaped arch with several sound teeth, posteriorly and anteriorly.

Wherever possible, I prefer taking plaster impressions in partial caaes; therefore, I proceeded in the usual manner to get a plaster impression, The teeth were at unfavorable angles, seriously interfering with the work. After several unsuccessful attempts and spending considerable time in trying to patch together broken pieces which were more intricate than a Chinese puzzle, I hit upon the following method :

That portion of the plaster which came out intact, viz: the palatal surface, festooning teeth lingually, and partially covering the ridge where teeth were absent, I replaced carefully in the impression-tray, flowing *very* soft plaster where the first impression had been imperfect. I next pressed the tray and plaster quickly into the arch, retaining it in position until the new plaster had set in. The cup was then easily removed, the new plaster fractured cleanly and in large pieces, some, however, remaining cemented to the original impression, making it a simple task to reunite the whole. The result was a perfect model of all the teeth, ridge palatal surface and condyles, from which I made a well-fitting plate.—*Items of Interest.*

MANY men are everlastingly preaching cleanliness to patients and instructing them to brush their teeth when they themselves are not clean. This is a mistake.—Ira B. Crissman, in *Review.*

TO PREVENT RUST.—If iron, steel, nickel or copper instruments are dipped in alcohol containing a little borate, carbonate, bicarbonate or benzoate of soda, they will not tarnish.—*Lancet-Clinic.*

FUNCTION OF THE UPPER THIRD MOLAR.—As this tooth is the only one of the dental caries which presents the typal three basal cones which enter into the construction of the typical upper molar, some explanation is frequently demanded as to why this should be the smallest of the molar teeth, and why the small molar does not approximate the bicuspid teeth. It may be possible that the following explanation has been published before, but I have never seen nor heard it and therefore present it.

It will be noted that the lower jaw is a lever of the third class, the power being placed between the fulcrum and the weight; the fulcrum, the temporo-maxiliary articulation; the power, the direct muscles moving the mandible, the masseter, and temporal; the weight is represented by the resistance of substances in process of being incised or crushed between the teeth.

Being a lever of the third class, it follows that, with a given amount of power, the resistance it can overcome is governed by the distance of this resistance from the fulcrum; that is, the molar teeth exert more force upon food masses placed between them than do the incisors. This third molar being nearest the fulcrum, exerts more pressure upon bodies against which it is pressed than any tooth anterior to it. It is therefore by anatomical position designed for the application of great force. Its root or roots being curved backward, instead of being straight, will produce a greater diffusion of force received upon the crown than were the roots straight; this is also true of the lower third molars. The mechanical element in original root formation is, for the present, left out of consideration.

It is seen that in the occlusion of the upper third with the lower third molar, the conical palatal cusp of the upper tooth is in antagonism with the broad occlusion surface of the lower third molar. The lower molar, therefore, is a base upon which a body is to rest which is to be acted upon by a heavy conical antagonist. The usual functions of the teeth, incising and crushing, are clearly not called for, as the structures named are not of fit design for such a purpose. Any one may test, by simple experiment, that the mechanical design described is one fitted best for the breaking, not crushing, of hard, brittle bodies; the firm base, conical tool, and great force all point to this. The articles entering into a dietary which call for these forces are nuts which have hard, resistant shells; *ergo*, the function of the third molars is the crushing of nuts.

It is offered as a suggestive datum to those who are interested in the philosophy of evolution, that the crushing of nuts, or for that matter any hard and brittle foods, is no longer called for in the maxiliary work of the civilized man, and physiological disuse is a corollary. On the other hand, it is not to be forgotten that the buccal cusps of these teeth have their function, which, by the same reasoning, are adapted to the masticating of tough meats and vegetable fiber.—H. H. Burchard, *Dental Cosmos.*

TO DIAGNOSE PULPITIS.—Since the recitation of cases seems to be in order, I will refer to one that I have recently had. It relates to the subject of pulpitis. The question has risen as to the difficulty of diagnosing these cases. It is difficult sometimes to locate the pain. Patients frequently refer it to some remote point. A lady came to my office early in July saying that she was having trouble on the right side, pointing to the interproximate space between the second bicuspid and first molar. She said the pain was located there. I made a careful examination and could find no cavity. The pain was not severe and I told her it was probably only temporary. While I was absent from the city she had a recurrence of the pain and had the tooth examined by some other dentist, and he was under the impression that there was a cavity in the first molar. However, she did not have anything done, and came to my office one day after I had returned. She came in the midst of excitement and began to take me to task for overlooking a cavity and allowing her to suffer this pain. She pointed out the tooth which she thought was giving the trouble. She pointed definitely to the second bicuspid. I examined it, and could find no cavity in either the first molar or second bicuspid.

My method of diagnosing these cases is this: Instead of cold I used heat. I take a cone of heated gutta-percha, which is tenacious and better than a hot instrument. It will cling to the surface of the tooth. I applied this to the second bicuspid and she flinched. I said: Is that the character of pain you have been suffering?" She replied, "No." I then went from one tooth to the other until I came back to the third molar, which had a large oxyphosphate filling in it. When I applied the heat to it she flinched again, and exclaimed, "There, that's the tooth. I told you all the time it was that one," and she put her finger on the second bicuspid. I drilled through the oxyphosphate filling and struck a case of pulpitis. I destroyed the pulp and this was the end of the trouble. This is another instance illustrating the fact that we can not take a patient's word as to what particular tooth is giving trouble. We must find it out ourselves. The rule I follow is to test one tooth after another. The patient will flinch when a living tooth is touched, but it will not be the same character of pain that they have been suffering. It is momentary and passes away. But the moment you strike the right tooth they will say, "That is the kind of pain I have been suffering."—C. N. Johnson, *Dental Review.*

TO RELIEVE SENSITIVENESS AFTER GRINDING A TOOTH.—Apply a saturated solution of carbonate of potassium and glycerin.—F. L. Platt, in *Dental Digest.*

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ARTICLE I.

CARE OF THE MOUTH IN RELATION TO PROPHYLAXIS OF THE DIGESTIVE TRACT.

BY G. V. E. BROWN.

A discussion of the subject under consideration necessarily concerns the two principal offices of the oral cavity in the process of alimentation and pathological conditions originating in this region, viz: Mastication, insalivation, reflex nervous disturbances, micro-organisms.

The proper trituration of articles of food depends upon the perfect occlusion of the morsal surfaces of the teeth, and is absorbed by malformation of the jaws, loss of the teeth, or destruction of their crowns from caries or other causes; by artificial dentures and bad habits of mastication.

For prevention of trouble from imperfections of the teeth the physician must naturally have recourse to the services of a dentist, but inquiry into the habits of mastication, and in this regard no greater assistance can be given than an effort to make the environments during the hours for eating such as will have a quieting mental influence and assist deliberation in all of its processes.

Upon the action of the saliva is dependent digestion of the starches and their canversion into sugar, the process continuing in the stomach after swallowing, and if this action upon the carbohydrates be insufficient, such matter becomes a source of irritation and medium for the ferment-producing bacteria, or, if passed into the intestines in an undigested state, will overtax the digestive action there and cause intestinal disturbances.

Here again mental preoccupation or mental distress must be so far as possible allayed, as upon an active consciousness of the gustatory function is dependent, in a large measure, the flow of the saliva from its glandular sources. Again, also, we find this dependent upon the effect of masticatory effect, as the activity of the parotid is much stimulated by the pressure of the ramus of the inferior maxillary, hence undue haste must necessarily result in the swallowing of a bolus of food improperly mixed with saliva. The wearers of ill-fitting artificial dentures, by reason of the dislodgement suffered in opening the jaws wide, or the dropping down on one side during an effort to crush or masticate upon the opposite side of the mouth, acquire the habit of a sliding movement and do not open and shut the jaws freely. They thus become frequent sufferers from digestive disturbances, hence the erroneous theory (still extant, I believe, among certain homœopaths) concerning the poisonous influence of mercury set free from the vulcanization of the red-rubber plates.

Reflex action from inflammations of tooth-pulps, pericementum and gums, while widespread in its general manifestations upon other parts, has comparatively infrequent direct influence upon the digestive tract, yet there are well known ill effects accompanying the irritation of first dentition, not, as frequently assumed, by the inflamed condition of the gums, but by the pressure of the still open end of the root in its imperfect state of development upon the pulp of the tooth, and its nerve connection caused by the tough overlying tissue resisting nature's efforts to push the crown through as growth takes place. In like manner we sometimes find difficulty in the eruption of the third molars (so-called wisdom teeth). The lance can of course largely prevent such disturbances.

The necessity and value of sterilization of the secretions of the mouth, as a prophylactic measure, with references to diseases of the stomach and intestines, depend upon the nature of the micro-organisms found there, and whether these can withstand the action of the gastric juices long enough to become excitants of pathological conditions, or pass through into the intestines with sufficient vitality to reproduce themselves and there also continue to be breeders of disease.

These points have been most carefully determined by Dr. Miller, of Berlin, and Dr. Fenton B. Turck, of Chicago, to whom I am indebted for valuable literature upon the subject.

Dr. Miller was able, in an uncleanly mouth, to estimate by culture methods 1,149,000,000 cultivable bacteria. He isolated twenty-five different kinds, and of these twelve were again found in the fœces, eight in the stomach. He demonstrated that there were five forms of gas-producing bacteria. As a result of his series of experiments he gives the following conclusions:

1. The microbes which are swallowed at the beginning of a meal do not pass into a stomach filled with gastric juice, but into an empty stomach having a neutral or alkaline reaction when free from hydrochloric acid, which does not appear in detectable quantities until after the lapse of one and one-half hours.

2. The micro-organisms are often imbedded in solid particles of food, thus escaping for a while the action of the juices.

3. Liquid substances do not remain long in the stomach, but soon pass into the duodenum and carry with them the bacteria before any considerable amount of gastric juice has been secreted.

Turck says: "It has been observed that pathogenic micro-organisms may be swallowed and still no infection of the stomach be apparent, but let some errors of diet, the abuse of alcohol, irregularities of living take place, then the mucous membrane forms a fertile soil for the development of the micro-organisms." He calls attention, further, to the fact that the bacillus coli communis developing in the lumen produces no marked change, but when developed on the walls it lowers the vitality of the cells and paves the way for more active pyogenic organisms, or if imprisoned in the tissues it at once becomes a pyogenic organism.

The following case, described by Turck, I quote, as it illustrates the value of an accurate demonstration of existing bacteriological conditions in harmony with correct diagnosis in actual practice, by which the hitherto speculative status of this subject is at once removed.

"Cultures were made from the mouth, in which were found large numbers of bacillus lacticus; germs of putrefaction, as well as fermentation and staphylococci. Pyogensaures were also found in an abscess in the mouth. Cultures were made from the stomach also and the bacillus lacticus was found, groups of thread-form bacilli and staphylococci were also found. It was a severe case of rapid gastric inflammatory process with beginning of atraphy. Disinfection of the mouth and placing the teeth in good order were the first indications in the case. A similar disinfection of the stomach with soap and water. followed by lysol, was instituted. An improvement in the case was manifested at once."

In other cases, cited by the same author, complete cures were effected simply by treating the mouth and showed the same corroborative bacteriological testimony.

Disinfections in the oral secretions must include such operative measures as may be necessary for the removal of exciting causes—filling, treatment, or extraction of carious or diseased teeth and roots, diseased bone; cleansing of pockets and deposits about the necks of teeth. The regulation of the position of the teeth in cases presenting malformations, removal of artificial dentures with, if possible, a metallic base to give an increased healthfulness of the covered mucous membrane, by reason of better conducting properties; if not removal, at least the correction of mal-constructed bridge-work and crowns. All this of course pertains to the dentist's portion, and concerns the physician only in that if done according to his personal direction, as to the intended result, the dentist's services will be usually found to be much more effective, but the use of an antiseptic mouth wash can do wonders of itself by repeated application and is easily within the province of every practitioner of medicine.

The difficulties encountered in the sterilizing of the buccal secretions are: 1. By reason of dilution with saliva, any drugs sufficiently powerful to destroy germs are rendered almost, if not entirely, inert. 2. The short time of exposure during the process of rinsing the mouth is insufficient for those of slow action, especially when particles of solid food are impacted in the teeth. 3. Danger of injurious effects on the tooth structure. 4. Unpleasant tastes are objectionable.

With these essential facts in view, the preparation of a suitable mouthwash prescription becomes a simple matter, and further reference to extensive literature on the subject is unnecessary.

Soap, applied with a brush, is one of the best cleaners, by reason of its alkaline properties dissolving the mucous. In my own practice I have patients hold in their mouths, from two to five minutes, a solution of 1-1,000 bichloride of mercury and hydrogen dioxide, equal parts. This insures some degree of safety to both patient and operator, and upon dismissal give a prescription as follows:

℞ Listerine.
Glycerine, aa, ℥ iii
Carbolic acid, ʒ ii

M. Sig.: Dilute one-half teaspoonful in one-third glass of water.

Hold in the mouth and continue the cleansing process carefully by the watch for at least two minutes. I have found this to be effective, agreeable to most persons, and valuable by reason of its simplicity, for patients can safely vary the strength in using it from time to time, as the condition may seem to require.

During active suppuration it is sometimes necessary to urge the use of such a mouthwash every hour for a few days, but two or three times in twenty-four hours is ordinarily sufficient.

In a paper read before the last meeting of the American Medical Association I stated that I believed a part of all treatment in infectious diseases, febrile disorders, and diseases of the stomach and intestines should be a thorough disinfection of the mouth; that 95 per cent of, if not indeed all, patients would have present in the mouth some condition favorable to pathogenic organisms.

My own experience is filled with illustrations of cases, including a variety of gastric and intestinal diseases, relieved and cured by simple removal of exciting causes and disinfection on the oral cavity. What is true of my own experience is also true of all others who have given the matter active attention.

In conclusion, the question naturally arises: How much consideration of mouth diseases is possible for the general practitioner in the practical application to general practice, without expert knowledge and without being able to get the assistance of a dentist in more than a small proportion of his patients? As an answer I submit the following: In making the usual examination of the tongue, while noting its indications, look about the mouth and note:

1. The general condition, cleanly or otherwise; lesions of the mucous membrane surfaces; teeth missing, or with carious crowns, old roots, bridge-work, gold or other artificial crowns.

2. Examine surfaces of the gums for fistulous open-

ings of alveolar abscesses, or for any sign of discharge from diseased bone.

3. If artificial dentures be worn, notice if firmly in place by making patient open and close the jaws, also the state of uncleanliness.

4. See if there be deposits of tartar and other matter about the necks of the teeth; make pressure on the gums to test for discharge of pus.

5. In children's mouths look for the eruption of teeth expected at that age.

6. With symptoms of chronic nasal catarrh, having unilateral appearance, be on guard for trouble with the maxillary sinus and examine carefully the region of the upper jaw, from cuspid to second molar, for indications of a dead root or tooth, or history of one having been extracted which might have been an exciting cause.

7. Do not be deceived, even though the mouth be cleanly in appearance and filled with shining evidence of the dentist's handiwork. Examine each tooth in as strong light as possible, compare color with that of its neighbors in the arch, and if one be slightly darker than the rest it may indicate a dead pulp, and if the history of treatment does not account for its color, quite probably the pulp-chamber of such a tooth is filled with putrescent matter from which might be ignited an infection at any favorable opportunity.

8. Percussion with some light metallic instrument will often reveal, by pain or difference in sound, an affected tooth. Thus, by simple methods of observation, nearly all the pathological conditions of the mouth can be readily diagnosed, and the advisabilty of the disinfection at least determined while engaged in the daily round of visits.

Whenever the internal administration of antiseptics is indicated, is it not reasonable to assume, in view of the testimony, that the beginning of the digestive tract should be cared for?

As a last word, and even at the risk of irrelevancy, I wish particularly to call attention to the consideration of the important bearing of this subject in cases of appendicitis, and, without entering into a discussion of this subject, to suggest that with the powers of resistance impaired in the vicinity of the seat of the inflammation, constant passage of pyogenic organisms must be a dangerous and inviting cause of infection, at least sufficiently so to warrant as rational the effort to prevent their introduction from the mouth. Especially is this true in cases that show a tendency to recur from time to time without operation, and doubtless many an otherwise aseptic operation may have been rendered useless by disregard of this precaution.—*Exchange.*

ARTICLE II.

AMBIDEXTERITY.

BY HERBERT LAKE, L. D. S., MITCHELL, ONT.

Ambidexterity : a term applied when the movements and sensations of the limbs on one side of the body are under equal control and command with those on the opposite side. There seems to be an unwritten and yet unaltered law to the effect that man should use one hand rather than the other as the instrument of his will. That is to say, one of his hands is the active or controlling member in all that he does.

Right-handedness means, the right hand is the guiding hand, while in work the left one assists. The union is inseparable. In all work which requires both hands the left does as much work as the right, but only as an assistant, and that involuntarily. The active hand is always nearest the work. The baseball player who bats right-handed holds the bat over his right shoulder, has his right hand next the end with which he hits the ball.

The foregoing may also be said of a left-handed person. There are ideas prevalent as to the cause of the majority of about fifty right-handed persons to one left-handed. Some writers affirm that it is a matter of training; that to the untrained child there is no distinction, and as the brain develops, the powers of imitation, together with the training of nurse and mother, bring about the result. There is much in this story Take a child before the age of training can begin; hold before it a simple toy. Which hand will be reached out to grasp it? As often the one as the other. Further, say for argument's sake that the child is developing left-handedness. Imprison that hand, and see if the child will not adopt the usage of the other. Naturally it will, all theories to the contrary. Set free the imprisoned hand, and what is the result? In one case which came under the writer's notice, the happy faculty of being ambidextrous.

There are many degrees and shades of right and left handedness prevalent in adult life. There are many who are ambidextrous naturally—many to certain degrees showing the natural preference for either the one or the other hand, and yet are indifferent even to preferring the alternate use of both hands. They throw a ball right-handed, bat it left-handed, spring into a race from the left foot, but in the running jump may leap from the right foot. The lower limbs are less closely controlled by the will than the upper. Their movements are more often involuntary, though the moment they are in such a position as to change them from their natural bent the brain is at once called in for a decision. Some writers have attempted to prove that the right hand is the one intended by the economy to be the useful hand, and have gone so far as to say that left-handedness is indicative of a lower degree of intelligence. The idea is combatted by all the observation and tests one can bring to bear on the subject.

We know that where there is a choice of two directions of growth or movement in plants or animals without apparent advantage either way, a preference is shown for the one over the other. For example, among the heavenly bodies the planets and their accompanying satellites follow a similar law; all accompany the earth and its moon save the moons of Uranus, which circle their primate an opposite way. The woodbine twines in its own direction, possibly from left to right, but the climbing hop-vines may reverse that and run from right to left. The grain of the rock-elm is always from left to right, but the ironwood of the northern zones grains in the opposite direction. The squirrel will turn to the right as he spirals up a tree, unless there is danger in that direction; but his cousin the chipmunk almost invariably seeks the opposite course. When the question of moral intelligence is mooted in this connection, what can be said of the coon, who turns neither to the right nor left as he shins up out of danger, his heart full of guile and his stomach full of stolen property?

Why does man use his right hand more than his left? Can the arrangement of the internal organs be made to account for it? The heart is lying obliquely in the left side. The organs of respiration differ in size and weight. The organs of respiration differ in size and weight. The blood vessels in the upper part of the body are unsymmetrically arranged. More than one scientist has undertaken to prove this a cause for the action, though it is hard to see that, separate from the brain, any of the organs have aught to do with it, Now; the left side of the brain controls the limbs on the right side, and *vice versa*. Does any one venture to say that the left brain is greater in size, weighs heavier, or contains more matter than the right? Popular usage, early training and a predisposition to the right hand accounts for the majority of right-handed persons. It is a fact, however, which cannot be gainsayed, observation has established, and tests have proven that a left-handed person is with that left hand more skilful, more steady than is a right-handed one. It is also a fact that a left-handed person is ambidextrous to a greater extent than is a right-handed one. Popular prejudice is against the left hand, and the right is trained to dexterity. Manufacturers of instruments, of utensils, etc., do not allow for left-handedness, and as a result the unfortunates have either to work under a handicap or adapt themselves to the circumstances.

What is the benefit to a dental operator in being ambidextrous? What operations has he to perform in which he would be helped by his ability to use either hand with equal skill? The statement is ventured, and though discussable, is nevertheless made, that instead of being of use ambidexterity would be a hindrance. Time is money to the dentist, and the time lost in selecting instruments, shifting positions, etc., would not suffice to recompense for the advantage gained by the use of the opposite hand. Again, the servant may make a good master, but the master never makes a good servant. The right hand of the operator is the directing, the motive hand. The left is the assistant. A gold filling is in progress. While the right hand is placing the pellets in position and guiding the mallet, the left is adjusting the rubber-dam, managing the saliva pump, holding the mouth mirror, etc.,—a deal busier than the right hand, but still occupying a minor position. Now, let us change places. The left hand directs the work, and training and practice will insure a degree of success unsuspected, but no amount of will-power, practice or determination will enable the operator to perform with the right hand the work of assistance so admirably and yet involuntarily undertaken by the left. You may make the left hand a successful director, but never will the right occup a subservient position.

As one who has practiced ambidexterity with the desire to benefit thereby, let me advise leaving it alone. The results are no reward for the time spent.—*Dominion Dental Journal.*

ARTICLE III.

HOW CAN WE EDUCATE THE PUBLIC?

BY DR. B. J. DE VRIES, HOLLAND, MICH.

How shall we educate the public? The dental profession itself is inadequate to the task. Where better can we go for assistance than to that grand educator itself—the public schools? Already there has been added to the curriculum of our schools such branches as hygiene and physiology. Why not also give instruction in the care of the teeth? If one hour in every week was judiciously devoted to this subject it would be time well spent.

For instance, from charts with a few illustrations.

Give the number and names of the deciduous and permanent teeth; time of eruption; what kind of food is beneficial to tooth structure?

How should teeth be brushed? With what? etc.

I believe if some wide-awake dentist would write a small, attractive work on this subject, to be used in the public schools, he would confer a great benefit on society, and I am sure it would not be without remuneration. Society must learn that a dentist cannot save teeth without the assistance of their own efforts. There are those who will not, among men and women as well as children, but let us do something for those that know not how and why, who never come near our offices, and who are waiting to be taught that they may care for their own teeth as far as in their power lies, and to be able to discern when they need the assistance of a dentist.

We take it, then, for granted, that if we expect to see good results from our labors we must establish habits of cleanliness. The use of the brush and a proper antiseptic mouth-wash are essential parts to be performed by our young patients. And without these habits our work will be void.—*Register.*

ARTICLE IV.

DENTAL HYGIENE.

BY J. CLIFFORD WING.

One of the chief duties of the dentist is to remedy the ravages of dental caries and to use all possible means of averting it. "Prevention is better than cure," and this is especially so with the teeth. Various digestive changes are constantly going on in the mouth. Starch is being converted into grape sugar, and lactic and other acid fermentations are always taking place. The particles of food which lodge in the interstices of the teeth form a pabulum for the multiplication and habituation of micro-organisms, which turn the food into a fermenting mass, and this, being of an acid reaction, is highly delcterous to the tooth structure. This is especially so in dirty mouths, in which fermentation and putrefaction are allowed to continue undisturbed.

How are we to combat these forces? It is needful that the tooth germ should have the proper constituents supplied to it for its growth and calcification, both before and after birth of the child. Therefore the diet of the mother should, as far as is practicable, include such elements as are fitted for the nourishment of these organs, with what is required for the general support of the child. Whole-meal bread is preferable to ordinary white bread, from which all the tooth and bone forming constituents of the grain have been eliminated. It is chiefly the outer portions of the grain which contain the tooth-forming phosphates, and these are generally discarded in the manufacture of flour, so as to produce a whitier article. That which is discarded is full of nutriment for the teeth; that which is retained is little more nutritious than starch. Oatmeal, and like substances, are valuable articles of diet for tooth and bone-forming purposes.

Then, after birth, the food should be of the necessary character to produce well calcified teeth, for the few short years of childhood settle the quality of the teeth of a lifetime.

The best diet for the infant is the natural milk, and later cow's milk. Milk has been said to be "the food prepared by Nature for the maintenance of the young," and as it contains most of the substances needed in the formation of the teeth, as well as those for the general welfare of the child, it should be the staple article of diet during infancy, and its use should be continued throughout childhood and youth. When the child is old enough, the use of oatmeal and whole-meal bread, as a part of the daily meal, will tend to produce teeth good in structure and well calcified, and therefore resistant of decay. As the dentine and tooth-pulp always exert vital action against caries it will be seen that diet is of importance throughout life to the welfare of the teeth.

The most essential agent in the preservation of the teeth is cleanliness, for so great are the powers of the decay that unless kept clean and aseptic the best of teeth will be likely to fall a prey to caries. To a pleasing and and agreeable expression of the face a clean and healthy denture is of the greatest consequence. We all know the difference between a clean and unclean mouth. The clean mouth, with its bright looking teeth free from deposit, will look pleasant, even though the teeth themselves may not be regular. The gums will be healthy, and the breath pure and sweet. The unclean mouth, on the other hand, contains dull, dirty teeth, covered at the margins with deposit, the gums is reddened at the edges, and soft and spongy, and the breath—well, most of us can speak from experience on that subject after our extraction mornings, and the less said the better. So that both for the preservation and appearance of the teeth it is of the greatest importance to pay attention to cleanliness. A person can not be brought too early into habits of strict cleanliness;

a tooth-brush can scarcely be placed too early into the child's hands with instruction how to use it.

The tooth-brush must be fairly small, with bristles not too closely set together, and of medium stiffness. It is preferable to have the brush notched crosswise, and to have the central rows of bristles longer than the outer. It should always be kept in the open air, and certainly not shut up in a closed vessel. It is useful to have an alternation of two or more brushes in use at a time. It is hardly necessary for me to say that the teeth should be cleansed night and morning, especially at night, for if not, the particles of food are left undisturbed for some hours to ferment and putrefy and exert their deleterious action on the teeth; whereas, if the brush has been used, all these agents of decay have been removed. The practice of giving children a biscuit or something sweet on going to bed must be strongly condemned, as it fills the interstices of the teeth with highly fermentable material, which remains to continue its injurious action while the child sleeps.

To return to the use of the tooth-brush—the movements should not so much be the usual horizontal action, but an up and down movement, sweeping the *debris* from the gum margin to the crown. In the former movement, the spaces between the teeth are hardly touched, indeed, *debris* is often swept into them, while in the latter the interstices and all parts of the teeth are cleansed.

Patients should be made awars of the fact that they are, or ought to be, cleaning the teeth, not for appearance so much as for preservation, and that it is essential to brush the back teeth as well as the front and all surfaces. In fact the teeth should be brushed in all those parts which are accessible to the tooth brush.—*British Journal.*

ARTICLE V.

LIGHT IN VACUUM TUBES.

At the second day's session of the electricians' convention held at the Electrical Exposition, D. MacFarlan Moore lectured on "The Light of the Future."

The light of the future, according to Mr. Moore, is a glorified electric light, depending neither upon an incandescent filament in a glass bulb nor on a glowing crater between two carbon pencils. It is "nothing in a state of intense vibration," and the result is a brilliant purplish light radiating from long glass tubes.

Mr. Moore demonstrated the practicability of his invention—light without heat—before a large assembly.

Around the stage, suspended by wires from the ceiling, were a number of closed glass tubes, each about ten feet in length; each tube had been exhausted till only about one-millionth of an atmosphere was left. By means of a small electrical device, the few atoms in the tube were set rapidly vibrating and the hall was completely illuminated by the light which issued from the tubes.

In explanation of the phenomenon of light by inductive effect in vacuum tubes, Mr. Moore described the methods he uses. The vacuum vibrator is the nucleus of his invention. It consists merely of a spring fixed at one end and free at the other. To the free end, a small disk of soft iron is attached, and the center of the spring rests against a contact point. All this is inclosed in a small exhausted tube. The only other apparatus is a small electro-magnet and a long glass tube. A current from the dynamo is passed through the coil of the magnet and then through the vibrator, the soft iron disk on the vibrator spring being placed above the magnet. The wires are attached to the two ends of the magnet coil and also to the two ends of the long glass tube. When the circus through the magnet and the vibrator is closed, the small disk at the end of the spring vibrates with great rapidity and breaks the current in the vacuum with each vibration. This rapid vibration is communicated to the atoms in the long tube, and the result is a light.

Mr. Moore explained to the audience the different steps which led him so far toward the desired result, each step being illustrated by some piece of apparatus and the intensity of the light increasing with each step. The long tubes contain nothing, not even a wire, but each end is in contact with the two wires from the magnetic coils. This is all. And yet the tube becomes a rod of solid opalescent light, which shimmers and glows in the tube as the atoms oscillate under the influence of the rapidly disrupted current in the vibration. It will be remembered that on the opening of the exposition a frame of these tubes was so arranged in the gallery that Governor Morton, as he touched the key which set the machinery in motion, appeared framed in the beautiful etheric light, while above him glistened the words "Let there be light."

Mr. Moore is about twenty-seven years old, and up to two years ago worked at the draughting table of a large electrical concern. He is a graduate of Lehigh University, and for years has been interested in mechanics and electricity. It is not more than eighteen months since he first showed to a few skeptical friends a little tube of two inches, from the ends of which he connected two wires to the terminals of the socket of an ordinary electric fixture, causing the little tube to glow with the purplish light he had so intensified.—*N. Y. Tribune.*

ARTICLE VI.

VARNISHING CAVITIES.

BY DR. W. G. BROWNE, ATLANTA, GA.

The incompatibility of tooth-substance and the metals we use for filling teeth is a well-recognized fact, and it is always good practice to interpose some substance between the metal and tooth-structure to prevent, as far as possible any injurious effect from such incompatibility. Gutta-percha, chloro-percha, cement, and varnish, each have their merits, but none seem to have so many points of excellence as a clear resin, such as damson, dissolved in chloroform. It acts as a non-conductor of thermal changes as well as an insulator against electrical influences. It is not readily soluble in the fluids of the mouth. Being transparent, no discoloration is shown when used, where enamel walls are thin; in fact, it prevents discoloration of the tooth from oxidation when an amalgam is used which contains metals which oxidize in the mouth. To a limited degree, it may act as a support to frail walls of enamel, especially if the filling be inserted while the varnish is in a plastic state; this refers more especially to amalgam fillings.

In the insertion of large gold fillings it is helpful in starting the filling, holding the first mats or cylinders of gold firmly adherent to the dentine, and makes it almost out of the question for gold fillings to come out if proper attention has been given to the method of applying the varnish and gold in the teeth when commencing the filling.

I do not for a moment advance the idea that we should depend on the varnish to retain the filling, independent of other means, but it will not be found necessary to make deep retaining pits, but only slight undercuts in the most convenient places in the cavity, thus saving the operator valuable time, and no harm can possibly result from its use, while much good must come.

I am satisfied that when the profession realizes the benefit accruing from this method it will be universally adopted.—*Southern Journal.*

ARTICLE VII.

AN APPARATUS FOR DRAINAGE.

BY DR. M. L. RHEIN, NEW YORK.

About four years ago there came under my hands for treatment a young lady, for whom I did considerable work before her mouth was placed in complete order. Previous to coming under my care she had considerable dental work done in Paris, and I found several teeth devitalized, the pulps not having been removed. About the end of the root of the right upper second bicuspid there was an abscess discharging freely. After particular care having been taken to thoroughly fill the root of this bicuspid to the very end, I informed her that it would be impossible to make a radical cure of this abscess without amputating the end of the root, and that if this were not done I would prefer the removal of the tooth rather than have it remain in position, especially taking into consideration its close proximity to the antrum.

She never gave me the opportunity of operating on this root. In fact, for two years I lost sight of the patient till about four or five weeks ago, when I was hastily called in consultation by her physician. She had been married in the interim, and was then pregnant about five months. When I saw her, there was a temperature of over 102° Fah., with a very considerable swelling in the region about the right eye. Referring to an old diagram of her mouth, showing exactly what I had done, I was soon able to diagnose a condition of antral abscess. I noticed that the bicuspid had been left by me with a large contour gold filling extending around both proximal sides of the tooth. I now saw that an amalgam filling had been inserted in the center of the crown. She vigorously denied, at first, that she had been under any other dental treatment since I had seen her last, but after pointing out to her the convincing proof shown by the amalgam filling, she conferred, with a little chagrin, that on feeling some irritation from the old abscess, she had consulted a dentist who had been recommended to her especially for the cheapness of his fee.

The tooth was extracted, and this was followed by a profuse discharge of pus. The opening into the antrum was small, taking only a fine probe. The dentist to whom she applied, instead of endeavoring to discover what was the condition of the interior of the root-canal, drilled through the center of the crown into the canal, striking there the oxiphosphate, covering the gutta-percha which sealed the canal. Endeavoring to drill through this, he proceeded but an eighth of an inch before he penetrated the side of the root, and then completed his operation by forcing a mass of pink gutta-percha fully half an inch through this artifical opening. The result of this increased irritation was a weakening of the floor of the antrum at this point, and the subsequent penetration of purulent germs into that cavity. My original filling can be seen reaching to the very end of the root.

Having on my hands a patient pregnant about five months, with a condition of chronic empyema, it was impossible to perform the surgical operation necessary for a cure of this condition, yet it was necessary to keep the antrum aseptic and clean. Syringing out the antrum through the fistula was painful.

As a substitute for syringing my associate, Dr. C. L. Andrews, materially assisted me in devising and manufacturing a little apparatus which I successfully inserted in her mouth, and by means of which the antrum was thoroughly cleansed without any inconvenience or annoyance, and by means of which she will be able to take the proper care of it daily for any length of time to come.

The apparatus is a curved plantinum tube, which fits perfectly into the alveolar socket, and is made a little larger after entering the antrum, so that the tissues will readily hold it in position, and it cannot easily be withdrawn with the apparatus that prevents the oral secretions from entering the tube. At the same time, the open ends of the tube at the gingival border flare over both the buccal and the palatal side of the process, so that it cannot be pushed up into the antrum.

In this tube is fitted an ordinary canula, with a knob soldered around it at the point where it should cease to enter the tube. To this canula is attached rubber tubing, with a stop-cock close to the canula. The tubing is attached to a glass jar suspended in a metal frame. By placing the cleansing solution in this jar and elevating it to the proper height, we could painlessly wash the antrum in the most thorough manner, the fluids leaving by way of the right nostril. This is done so easily that the patient will be able to cleanse the antrum daily as frequently as may be desired. To the open end of this tube has been accurately fitted a platinum cone-shaped nipple, which acts as a positive stopper to the tube. This nipple forms part of the under surface of a strip of platinum, to which is attached a porcelain tooth, and this in turn is held in perfect juxtaposition by means of clasps around the molar and first bicuspid, and with metal rests attached alongside of these clasps, and holding on to the occlusal points of the molar and bicuspid, so as to prevent the apparatus pressing upward on the gum.

The patient will use a cleansing solution of boracic acic and glycerol, and if the thorough cleansing by this method does not bring about a positive cure, a thorough surgical operation will be made.—*Dental Cosmos.*

ARTICLE VIII.

LISTERIN.

BY DR. W. C. BARRETT.

The more I use listerin the better I like it. I am now prescribing it as a daily wash for the mouth, using it with the brush in full strength in those cases in which there seems an unusual predisposition to decay of the teeth.

I use it almost invariably after any surgical operation in the mouth as an antiseptic wash, 1 part to 10 to 20 parts of water.

In gingivitis, arising from a want of the care of the teeth, I inject it under the gums freely, and prescribe it as a daily mouth wash, using listerin 1 part, to 5 to 10 parts of water.

In the treatment of septic roots of teeth, I have seen the happiest effects from the use of listerin, forcing a pledget of cotton into the pulp cavity, after carrying a few threads of cotton wet with listerin into the root canals, and sealing the whole in the cavity with gutta-percha or wax.

In abscesses, I have frequently injected it with a syringe quite through the fistulous track, with the result of a complete cure by from one to three such treatments.

In diseases of the maxillary sinus, listerin is now my principal reliance. An opening having been secured, it is injected into the cavity by means of a spray syringe, diluting it with from 20 to 30 parts of water.

In pyorrhea, after the surgical treatment and the removal of deposits, I have found nothing better than listerin for daily use with a soft brush, diluting it with equal parts of water.

In pharyngitis, accompanying inflamed condition of the oral cavity, I use it as a spray on the pharyngeal tissues. If the patient be an adult, I frequently use it thus in full strength.

After nearly all protracted operations in the mouth, I offer as a gargle and mouth wash 20 to 30 drops in a half tumbler of water, and find it leaves the mouth in a delightfully cool and pleasant condition, promotes the healthy granulation of lacerated or bruised tissues, and offers a sure prevention to any possible septic infection. So general is its use by me, that a large proportion of my patients leave the office with the pleasant taste of listerin in their mouth. Thus their last impression is one of purity and cleanliness, and of careful attention on the part of their dentist.—*Items of Interest.*

ARTICLE IX.

FILLING ROOTS.

BY DR. R. C. YOUNG.

In Alabama Association.

There are few cases where I believe in immediate root filling. When the pulp is removed by injecting cocain, and this should be done in all single rooted teeth, it is best to fill at once, and here is the only place to use carbolic acid, except in fistulous abscesses. Even if immediate root filling does not give trouble shortly afterward, the tooth breaks down sooner than when the dentine has been thoroughly sterilized. I believe that there is much more under- than over-treatment done. Be careful how you use coagulants. These you can recognize by using a little white of egg in distilled water. Put in your drug, and if it is a coagulant it will cloud the water. Egg albumen and that of the blood are practically the same.

All being ready for filling, put on the rubber-dam making your holes with a red-hot needle. I use an old syringe needle; this makes a hole less liable to tear and hugs the tooth closer, often doing away with the ligature. For root fillings, I like chloro-percha, worked into canal, followed by gutta-percha points. Of course, canal must, in all cases, be as dry as possible. Evans' root dryer is indispensable. Cement is not reliable. It absorbs and becomes offensive. Smell the cement from an old filling, if you want to be convinced. Cotton is worse, lead discolors, and it is only short of a miracle when gold root filling is properly done. Salol is the latest fad, but has not come to stay. If you want an all-day task, try to fill an upper root with it. The crystals are to be packed in canal and then a warm broach inserted, melting salol, which crystallizes and fills root solidly. It melts at one hundred and four degrees. The normal temperature is ninety-eight and a half, fever, often raising it to one hundred and two to four, leaving a very small margin for warm drinks. If a metal filling will conduct heat enough to cause pain, I see no reason why the salol would not melt.

Should the tooth be off color, it should now be restored by bleaching with pyrozone 25 per cent. The dam must be on and root filled. Fill cavity with the pyrozone, evaporate with chip blower. I use pipet with bent point drawn smaller, then they are wrought by heating in alcohol flame till red, then drawing out to size wanted. Or asbestos can be used as a vehicle, but no paper or other fibrous matter should be used, as it lessens the bleaching power. It is unnecessary to seal up in cavity as in using chlorin, etc. I have bleached a badly-discolored tooth in thirty to sixty minutes. And they retain their restored color. One word about opening these tubes. I came near a serious accident with the first I used; it bursted in my hand, throwing contents in my face and pieces of glass all around. Had it gone in my eyes, it would probably have resulted in blindness.

To open,—place tube in vessel of ice-water, then wrap in towel, wet with ice-water, file the end or cut with stone, in water, then nip off with pliers and pour into glass stoppered bottle, when all is safe. After bleaching, tooth should be neutralized before filling.—*Items of Interest.*

ARTICLE X.

DENTAL LAWS AND THEIR ENFORCEMENT.

BY DR. A. M. CALLAHAN.

Dental laws ars so universal that nothing on the subject is left for discussion except the provisions they should contain relative to their efficiency in securing the best services attainable for the people, and their justice to the dental profession.

The laws of Kansas recognize diplomas issued by reputable dental colleges, or certificates from our State Board of Dental Examiners. Some State laws require the applicant to be a graduate of some dental college, or hold a certificate from some other State board, to entitle him to examination, while other States require examination without any previous record of qualification.

There are some good points in a law requiring examination of all persons who apply for registration. It has a tendency to keep colleges and boards of examiners up to a high standard, and effectually kills fakir colleges and diploma mills.

In our own experience of six years as a member of a State board of dental examiners, we have found commendable improvement in the teaching of some dental colleges since the amendment to our law requiring examination of applicants who are not graduates.

While we believe a high standard should be maintained by State boards, we do not think it should be made so high as to be prohibitive.

At times I have thought our board was too lenient, and that too many passed and were granted certificates of registration. But a comparison of our examination papers with those of twenty other State boards shows but three others which require a more thorough knowledge of any branches, and they only in anatomy, histology, bacteriology and chemistry. One of these three State boards—Pennsylvania—we understand is prohibitive; no person having been able to pass their examination.

Only sixteen out of eighty examined in Illinois have passed.

We require eighty five per cent. in operative dentistry, and eighty per cent. in prosthetic, and a general average of seventy-five per cent. in anatomy, physiology, histology, pathology, materia medica, oral surgery, chemistry, metallurgy, crown- and bridge-work, and hygiene. The class of fourteen examined in April last made an excellent showing. Twelve of the fourteen passed. Eleven of the twelve made a general average above ninety per cent. In our class of 1896 we examined twenty-five, of whom twenty passed. Of this twenty, four had never attended dental college—one of the four stood at the head of the class. This is an instance where a law requiring the applicant to hold a diploma or a certificate from some other State board to entitle the applicant to the right of examination would have been an injustice.

In my judgment, our law should require every person who applies for registration to pass examination by the board. Those who are qualified need offer no objections to such a law, and those who are not should be debarred from practicing.

It should also make provision for a temporary license, or a license modeled after that granted to teachers—first, second and third grades; the last to be a grade that would entitle the holder to a certificate of registration, and the others limited as to time, and possibly as to the special work they should be permitted to do. This last cause is only offered as a suggestion for consideration. We have no doubt a law granting a temporary license would send many young men back to college to complete their dental education.

We are especially interested in the enforcement of the dental law. While it is probably as well enforced as the most of our laws, it could be made much more effective if the registered dentists would make a joint effort to enforce the law.

There seems to be a general impression that it is the duty of the board to prosecute violators of the law.

We frequently receive letters from dentists (some of them signed by the writer, and some anonymous) blowing up the law, and the board in general, and the Secretary in particular, for not having some violator punished.

These gentlemen are mistaken in the duties of the board. No such provision is made in the law. If it were so, then some method of raising a sufficient revenue to pay the prosecutor a salary and expenses would have been provided in the law.

The law puts it within the power of the registered to see it enforced. If it is inexpedient for any one dentist to prosecute a violator, on account of the prejudice of the people, you can do it jointly. Let the dentists of each judicial district form an organization, and elect an executive committee, whose duty it shall be, during the time they hold the office, to prosecute any violator who comes within their territory. To enable them to do so effectively, an amount of money should be raised sufficient to employ some active, pushing lawyer and pay him an agreed fee for every conviction he secures. When a violator comes within your district, let every dentist make an effort to secure the names of persons for whom he has done dental work, and the nature of that work, whether filling teeth or plate-work, and about the date when the work was done, and report the facts to the chairman of your executive committee. If each one tries to do his duty, you can soon secure sufficient evidence for your lawyer to make a sure conviction.

If this plan is adopted, I assure you the violators will give your district a wide berth—they will soon learn to "keep off the grass."

I know there are dentists who will lean back with their thumbs in the arm-holes of their vests and say, "Oh well, these petty violators don't disturb me. They never do any work for my patients. The poor devils need all they get. No, I won't join your association. This class of dentists forget they owe the community something. They owe something to the less prosperous dentist, who is striving to do his duty to his patients and the profession. They also owe something to the profession at large, whose standard is degraded by the violator. Of all who should take an active interest in the enforcement of the law, there is none other who should so energetically use his influence and his money in that direction as the well-to-do dentist.

As a general rule, when a violator comes into a neighborhood, some one writes the Secretary, who promptly notifies the violator, and he at once moves his camp. But this is not always so. The violator sometimes stays until he wears out in that community.

We sometimes succeed in getting the county attorney to prosecute such cases. The law makes it his duty, but he sometimes does it so reluctantly and in such a manner as to say that he hopes the jury will not find the defendant guilty. Hence the necessity of employing a lawyer.

There are a few registered dentists who assume the right to send their students or assistants to other towns and assume the responsibility of a guarantee that their work will be satisfactory. They think they are entitled to this privilege by virtue of their registration. This is a mistake. Our law is like the plan of salvation, in the fact that every one has to work out his own salvation.

Any person not registered, who is practicing dentistry in this State except as a student or assistant, and then only with his preceptor or employer, under his immediate instruction and direction, is held by the board as practicing in violation of law.

This ruling is approved by the Attorney-General.

In a few instances a registered dentist has taken into co-partnership with him a man who is not registered. I believe this registered dentist, as well as the one who sends his assistant out to violate the law, is himself violating the law in aiding another in the violation of the law, and some day soon I hope to be able to test that matter by prosecuting the registered dentist.

There are some noble exceptions to most of the people I have talked about, and of course, this association is formed of these exceptions.

The board extends its grateful appreciation to the dentists in this State and out of this State who have so faithfully given their best efforts to see the law enforced.

This paper is written with the hope that it may produce some discussion in the manner of the enforcement of the law, and that some better plan may be devised than has been suggested by the paper. The board is willing at all times to do all within its power to assist in the enforcement of the law, but there is no money in our treasury to pay the expenses of prosecutions.—*Western Dental Journal.*

ARTICLE XI.

THREE PATHOLOGICAL CASES.

BY I. P. WILSON, D. D. S.

Read before the Anniversary Clinic, Chicago Dental Society.

Case I. Mrs. S——, aged twenty-eight, lived on a farm; had always enjoyed good health. Last April she suffered severely from nervous toothache in first left upper molar. Home remedies were applied, and after a time the pain subsided. The pulp had perished. Soon after the tooth became sore, the adjacent parts inflamed and the face swollen. After intense suffering for some days the acute form subsided, leaving a benumbed, heavy pain in the malar region.

A dentist in a neighboring town was then consulted, and the tooth extracted. This was followed by a gush of pus from the antrum of a most sickening character, causing nausea during the rest of the day. The discharge continued through the alveolus for nearly a week, when there was a cessation of pain, and finally the socket closed. But little discharge had at any time taken place through the nose. Some months passed, when the pain in the cheek and in the ethmoid region again appeared. She grew rapidly worse, and after receiving medical treatment for some time with no beneficial results, she returned to her parents' home in our city, that she might have her mother's care.

Other physicians were summoned, but were unable to find the hidden cause of the disease, or make a satisfactory diagnosis. In two weeks from the time of her removal she died of septicemia.

A post-mortem examination was held, the brain removed and the horizontal plate of the ethmoid broken down when the cells of that bone were found to be infiltrated with corrupt matter. The two large air cavities of the sphenoid were also filled with pus. The frontal sinuses were apparently in a normal condition. The examination was about to be concluded when one of the physicians kindly suggested that the case would be of peculiar interest to the writer, and asked that I be sent for.

On my arrival I inquired about the previous condition of her teeth, and was told that the dental organs had not been suspected as having anything to do with the disease. The antrum was then opened and found to be filled with a mass of thick, cheesy, corruption.

At the suggestion of the physician in charge, I accompamied him to another room to interview the mother, and from her we procured the foregoing history of the case. It is due the physicians who attended the lady in her last illness, to state that the apparent good health of the patient for a time after her first illness had led her family to dis-associate the first stage of the disease from her last sickness, and so her physicians were not advised of previous dental irritation.

I ought to state that the septum of the nose was deflected to such an extent as to almost entirely close the nostril on the affected side, so that the ostium from the antrum was almost if not entirely obstructed. This, of course, accounts largely for there being no discharge from the nose, and the consequent engorgement of the antrum.

Case. 2. Dr. D., aged thirty-seven, a clergyman, was advised by his physician to give up his work and travel, because of cerebral difficulty, softening of the brain being suspected. A trip abroad was planned, and in company with an attendant he sailed for London. Immediately on arrival, he was placed under the treatment of a noted physician of that city. A few weeks elapsed, when he complained of an aching tooth in the lower jaw. In a few days his face and neck became greatly swollen. His suffering was intense, and was attended with chills and fever.

A large poultice, covering the side of his face and neck, was ordered by his physician. Days passed without relief. A lancet was at length used, and a quantity of pus discharged. The swelling in the cervical region, however, only partially subsided. His condition grew rapidly worse, till death from septicemia relieved the sufferer.

His attendant was a man of intelligence, and of close observation, and from him I learned the above facts at the time of the burial at Bloomington in this State. I am satisfied that pus had pocketed at different places between the muscles of the submaxillary region. A dentist was not called, nor did the tooth receive any direct treatment.

In this case, as in the preceding one, there is much to be read "between the lines."

Case 3. Mrs. P., aged sixty-eight, of previous good health, and with excellent family history.

I was called in consultation with attending physicians. The case had been under treatment for more than a year. Morbid growths had been repeatedly removed, of late, from the nose. The cheek was considerably enlarged. A gold plate had been worn for two years, the rim of which was buried in the aggravated buccal tissues, making a cut nearly two inches in length, and a quarter of an inch in depth.

These symptoms led me to believe the antrum to be the seat of the disease.

At the request of the physicians, I opened into the cavity through the cut made in the soft tissues by the plate.

The posterior and superior portions of the sinus were found to be well filled with a spongy growth that bled freely on the slightest touch. There was no difficulty in irrigating the unoccupied portion of the cavity, the water passing freely into and out of the nose.

The plate was now, for the first time, laid aside.

Believing the disease to be of a malignant character, I advised the lady to go at once to a Chicago hospital for treatment at the hands of a skilful surgeon. But she and her friends, as well as the physician who had attended her, suggested that we wait for further development. I accordingly visited her home daily for three weeks, each time cleansing the passage from the antrum to the nose with medicated washes, which afforded considerable comfort at the time. I discovered, however, that the disease was rapidly gaining ground. Polypoid growths were continually forming in the nose, which her physician from time to time removed.

An angry appearing tumor of the cauliflower form, commenced bulging through the opening into the mouth. The cervical glands became involved.

After carefully studying the case in the light of our best authorities, I pronounced the disease to be of a carcinomatous nature, and to verify my conclusions I sent a clipping from the growth to a Chicago microscopist for examination, requesting a prompt reply, which came by wire in the following words: "Carcinoma—Prognosis grave."

I advised the friends of the unfortunate woman to take her at once to Chicago, which they did.

Prof. Senn was consulted, and confirmed the diagnosis given. An operation was determined on as the only possible hope of lengthening her life. An enlarged cervical gland was first removed, followed by excision of the left superior maxillary.

The patient rallied from the operation and appeared to be doing well for a few days, when facial erysipelas set in and death soon followed. Prof. Senn, I am informed, regarded the case of traumatic origin. Her brother, Dr. Smith, a prominent physician of Wellington, Ohio, who attended the operation, informed me by letter, received since writing the above, that his sister "had no heredity inviting the conditions and cause of her death."

The question of peculiar interest to us as dentists, is the cause of the malady. Was it the result of long and continued irritation, resulting from an ill-fitting plate? I am inclined to that opinion.—*Dental Review.*

ARTICLE XII.

SOLDERING.

Cleanliness from beginning to end should always be looked after. It is very poor, if not dangerous, policy to attempt to solder a piece of work that has not first been boiled in pickle or in alum-water that the oxid which forms from the alloy in previous heatings shall be removed. Either that should be done or the plate and backing should be scraped to give a clean surface.

Dr. A. O. Hunt: There is one thought; the unequal expansion of platinum and porcelain is such that if a large piece of solder is laid over all, so that if at any time during the process of rotating the flame in, under and about the investment, it cannot come in direct contact with the platinum pins, there will not be a sudden expansion of the metal in the pins, causing the porcelain to check. A plate of heavier solder prevents the too rapid transition of heat to the metal underneath, and thus equalizes more nearly the expansion of the metal and porcelain. I prefer the bellows to the blow-pipe. There are features in the use of the former that I regard as important. With the blow-pipe in the mouth the head must be at a fixed distance from the flame nearly all the time. One hand is occupied in directing the blow-pipe, while in using the bellows both hands and the head are free, so that one is enabled to see any part of the work to better advantage. A continuous flame can be managed by the bellows with so little effort that it is a decided improvement over the mouth blow-pipe. One other point is with reference to the kinds of flame to be used. A fine reducing flame of the blow-pipe is rarely ever called for in joining the points of a crown or bridge. The brush or larger flame, which will cover the greater part of the piece to be soldered, is more desirable, as one is less likely to break the porcelain, the heat being more evenly distributed over a large area.

Dr. W. H. Taggart: Draw the solder to one point with the blow pipe flame, to melt and to evenly distribute the solder. The heat will go to the hottest part, and there is a tendency for all the solder, when it has become melted, to gravitate to one point, leaping parts that are already soldered properly. You have to rotate it to get it to stay at one point. It is much easier to do this with the blow-pipe than with anything else. The fewer pieces of solder you put on at one time the better you fuse it, and get it to flow into all places without forming pits or pockets. It would be an advantage to put on pieces as they melt than to put on all pieces at one time.

Dr. F. N. Brown: Crown and bridge-work are my food and dirnk; I scarcely study anything else. The first thing I do when I procure any teeth from the dental depot, is to remove every particle of wax and allow none to come in contact with my work while in process of construction. I use "Parr's wax flux" in waxing up and holding parts together till the piece is invested. It is then placed over a Bunsen heater and "Parr's wax flux" burns out, leaving the piece fluxed, I then sprinkle it with a little dry powdered borax and place enough solder on to cover the pins of the teeth. I then proceed to heat the investment and solder up, adding one piece of solder at a time. I never remove my piece of work to a soldering block, or anything else, but let it remain on the Bunsen heater while soldering up.

Some breakages come from backings being so positioned as to put strain on the .porcelain in cooling. I think most breakages come from allowing the porcelain facings to touch, and that from expansion the facings are cracked. In soldering, I never use the mouth blow-pipe; I prefer a blow pipe on a stand, so that I can keep a foot-bellows or compressed air apparatus going, then having the flame constantly directed on the work. In this way there is no cessation of heat at any time. The use of "Parr's wax flux" in bridge-work cannot be overvalued.

Dr. B. J. Cigrand: I desire to say a few words in reference to Dr. Peck's paper It is a paper that I think will do both the older and younger members a great deal of good. Investment is only holding the parts in apposition and position while soldering; in single small pieces, where the parts can be held in apposition by wire or otherwise, investment is not necessary. Some years ago I learned a lesson in soldering under somewhat exciting circumstances. When I first started to practice dentistry, one of my first cases called for the application of a bridge to restore the teeth. While I had the bridge and large investment on the fire, my attention was directed to the fact that I had some errand to do down town. I went down town to one of the dental depots, unintentionally left my investment and bridge on the fire at the office, and did not return for about two hours. While I was down town it occurred to me that I had left my bridge and investment on the fire, and you may be sure it did not take me very long to catch the first car. When I reached my office I believed that the bridge was spoiled, and as I am somewhat of an optomist, I tried to make the best of it. I made up my mind that the bridge was spoiled. I saw that it was red hot and thoroughly radiated, and after using the blow-pipe a little, the solder blowed away as so much cream.

I was determined, in the event of a failure, to have the personal pleasure of having brought it about, executed my intent, little thinking that an underlying principle in soldering would be revealed. I threw the case in powdered plaster of Paris to cool, and, on disinvesting the case, I found I had made one of the best solders in my life; the secret of which is: use the blow-pipe very little and get the case good and hard. I hardly ever use a blow-pipe except in large bridges. I use the Haskell-Bunsen burner for the entire operation, never employing a blow-pipe in the production of what we call barrel or telescope crown.

The globulating of the solder arises from the fact that the parts are not thoroughly heated, or there is present some foreign matter on the surface. Most solders are composed of several base metals. If the solder is globulated, and we still pour on the heat, the result is the zinc or brass is burnt out. The low-fusing metal is burnt out because you have poured a constant stream of fire on the globulated solder. This results in your having pure copper or silver remaining. You have in consequence a high-fusing solder on the gold. You constantly keep on the annealing point, and there is a hole burnt in the gold. This shows the utter disadvantage of using the blow-pipe to much extent. To prevent the solder from flowing in the direction where not wanted, I employ a paste of whiting and rouge.

When I make a barrel or telescope crown, after I have made the band and readjusted the cusps, and invert it and proceed to solder it to the band, the band may, while in the flame, become unsoldered. If the stove blacking or whiting, whichever you prefer, is used on the joint of the band you can solder the cusps full of gold, and there will be no unsoldering or opening up of the band. I have recently resorted to the method of filing all my solders as they come from the dental depots into almost a dust; to eliminate all of the steel, etc., from the filings, I pass through it a large magnet. This way your solders will melt much quicker since you create a greater surface for the flame to play on. With reference to holding the crown in the flame and the liklihood of the solder jumping out of position on account of the puckering up of the borax, if we take the crown and use gum-arabic, making it into a mucilage over the borax, we can force or hold the solder wherever we like and it will stick there.

Dr. J. H. Woolley: Borax in the process of melting has a tendency to move the solder. If the borax is melted previous to its use and ground finely, it will not interfere with the solder, so that that process makes the placing of the solder just where it belongs, or where it is needed.

Dr, Peck: A crown can be as easily contoured in the Bunsen flame as if invested. The solder can be melted on one side to any extent desired without disturbing that on the other side.

The idea that in soldering large cases very small pieces of solder should be melted into the crevices, etc., after which more is added from time to time till the case is completed, I consider one of the greatest mistakes one can make in doing this work. What is the use of occupying the extra time necessary to permit the case to partially cool, to place more solder, and to reheat, and to repeat several times till the soldering is completed, when all can be done in most cases with one heating. All that is necessary is care in the preparation of the case for soldering; the crevices must be thoroughly cleansed and fluxed, and the case thoroughly heated from the under side. If this preparatory work is not thoroughly done we must not expect desirable results.

I do not think the teeth or facings in contact, one with the other, are any more liable to break than when they are spaced—providing the case is evenly and thoroughly heated. Many times I have soldered large cases in which the teeth were in close contact one with the other, in fact, in some instances, even jointed together, and I haven't gotten into trouble. I can't help believing that the predominating cause of the breakage of teeth and facings is the untimely heating of the pins.—*Dental Review.*

ARTICLE XIII.

CATAPHORESIS IN THE REMOVAL OF VITAL PULPS FOLLOWED BY IMMEDIATE ROOT FILLING.

S. ELDRED GILBERT, D. D. S., PHILADELPHIA.

My method of procedure is as follows: The rubber-dam being applied to the tooth to be operated on, the loose debris is removed and cotton saturated with a 25 per cent solution of cocain is placed in the cavity; the electrode attached to the positive pole is now placed in direct contact with the cotton, where it must remain immovable till the pulp is anesthetized. the negative pole is either held in the patient's hand, or, what is better, applied to the cheek. The electrodes must remain stationary, as there will be a shock if the current is broken (whatever instrument is used). The indicator on the volt selector is gradually turned up till it reaches twenty-five volts, where it is allowed to remain till there is no sensation, when the current is broken. In turning on the current there should be no pain; the patient is told to give an indication just as the pain point is reached; it is allowed to remain till there is no sensation, then turned up as before, and so on till the desired point is attained. Should it be turned rapidly enough to give pain, turn it back a little, when the pain will immediately cease. The pulp being anesthetized it is now ready for removal, which will be without pain in almost every case, and with but the slightest feeling in others. When possible, removal with the broach is preferred, but in many cases this is absolutely impossible. These roots are opened by means of Gates-Glidden drills and sulfuric acid till the operation is nearly completed (neutralizing with bicarbonate of soda). For finishing I prefer to use muriatic acid, then neutralize with Liq. soda chlorinate. (I find Dr. Barker's acid applier, root drier, and canal filler is very handy in these cases). With a cotton wound broach an antiseptic is introduced into the canal, following with chloro-stopping (temporary stopping dissolved in chloroform to a creamy thickness). Then finish by inserting a temporary stopping cone. This is made by rolling temporary stopping between the thumb and fingers; several of these points of various sizes are kept ready for use. The root being permanently filled, the crown is finished with temporary stopping and allowed to remain for two weeks, and then permanently filled, or, after the root canals are filled, a permanent filling may be placed in the crown at once. I have treated a great many teeth in this manner, and not one has ever given the slightest trouble. For molars the first application will allow of the removal of the pulp from the largest canal without pain, but it will be found that usually on testing the remaining roots they are sensitive. The root in which there is no sensation is treated as before described, and filled. Cotton saturated with the cocain is again placed in the cavity, the current applied, which it will be found can be increased very rapidly, and in about five minutes the remaining canals are ready to be operated on. For teeth with single canals, including time after the dam is in place, opening, filling, completing and the removing of the rubber-dam averages forty-five minutes, and for molars an hour and a half. Sometimes it takes much less and sometimes a little longer. My greatest satisfaction is that I have no after treatment, and that I can finish the tooth at one sitting, without pain, and know that there will be no trouble from soreness afterward.—*Welch's Monthly.*

Obituary.

RESOLUTIONS IN MEMORY OF DR. FRANK ABBOTT.

At a special meeting of the Alumni Association of the New York College of Dentistry, held April 19, 1897, the following preamble and resolutions were unanimously adopted :

"WHEREAS, In the wisdom of an all-wise Providence the Alumni Association of the New York College of Dentistry is called upon to mourn the loss by death of our late professor and dean, Frank Abbott, M. D.; therefore be it

' *Resolved*, That the death of our late professer and friend calls for an expression of esteem for one whose character was above reproach, whose undeviating justice and loving kindness to all with whom he came in contact left impressions that can not be effaced, and whose power for good, both in and outside his profession, was immeasurable. One of the brightest lights of our profession has been snuffed out, but its influence —pure and strong—cannot be extinguished while dentistry lasts.

"*Resolved*, That this premable and resolutions be placed in full upon the minutes, and that a copy suitably engrossed be presented to his bereaved family, for whom we feel the sincerest sympathy.

W. D. TENSION,
B. C. NASH,
M. C. GOTTSCHALDT,
Committee."

Memorandum.—Professor Frank Abbott, M. D., born September 5, 1836, died April 20, 1897. College of Dentistry, clinical instructor, 1866-8; established infirmary, 1867; superintendent of infirmary, 1867; professor and trustee, 1868; dean, 1860.

Monthly Summary.

NEW METHOD OF ADMINISTERING CHLOROFORM.—Dr. Rosenbery asserts that the disturbances of the action of the heart and of respiration in administering chloroform, and also with other anæsthetics, is caused by irritation of the nerve branches of the pituitary mucous membrane, and attempts have been made to prevent this by benumbing the membrane with cocaine. After a test of fifty cases Dr. R. gives the following advantages of this method : 1. The first stage of anæsthesia is less unpleasant, and the patient never struggles against inhaling the chloroform. 2. The stage of excitement rarely occurs, and when it does it is very slight, except in the case of hard drinkers. 3. Only in a very few cases does vomiting occur, and then preceded by only slight nausea. 4. After recovery no unpleasant sensation is experienced. The cocaine is applied as follows : The patient is directed to blow the nose so as to thoroughly free it of mucous. Then he is placed into a sitting position, rather leaning forwards (never in a lying position) and made to snuff one centigramme of powder composed of a mixture of 10 per cent. bidrochlorate cocaine with an indifferent powder. After about three minutes repeat, and immediately commence the chloroform.—*Correspondenz Blatt.*

[I have used a cocaine spray in the nose for the same purpose.—C. E. Klotz.]

PEARSON'S LOCAL ANÆSTHETIC is composed of the following :

Chloroform,	12
Tinct. Aconite,	12
" Capsici,	4
" Pyrethri,	2
Ol. Caryophylli,	2
Camphor,	2

The camphor is dissolved in the chloroform, the Ol. Caryophylli added, and then the tinctures.—*Zahuarztliches Wochenblatt.*

PULP DEVITALIZATION IN THE TEETH OF CHILDREN.—By Dr. Darby.—One of our great difficulties in dealing with the teeth of children is the devitalization of the pulp when indicated. I have used, and with much success for this purpose, a paste of powdered cantharides and carbolic acid; say about one-twentieth grain of the powder with enough carbolic acid or creosote to make a paste. I know that the use of arsenic for this purpose is justly viewed with suspicion, but my opinion is that it is largely a question of how much arsenic is used. I use arsenic for this purpose in very minute quantities and have had no ill results. The canals of children's teeth should, of course, be cleansed thoroughly and sterilized. I question the use of cotton dressing in these cases, for should the foramen be large, owing to a partial resorption of roots, soft tissues might be impinged upon, and the cotton becomes a source of irritation or worse. I think the safer practice is to use fluid in the canals and oxychloride in the pulp chamber.—*International.*

A LITTER OF SUPERNUMERARY TEETH.—By G. Lenox Curtis, M. D.—A patient aged 21 years, with a history of a full set of deciduous teeth and no extraction of the permanent set, presented herself, complaining of pain and some swelling in the jaw near the symphysis. Examination revealed the absence of the inferior left lateral incisor, the left central being slightly loose and tender on pressure. A slight space intervened between this and the cuspid, the cusp of which was tilted forward and the apex well back, encroaching upon the bicuspid. Suspecting an unirrupted lateral, a shell probe was passed through the gum and periosteum until a glistering subject resembling enamel was reached. The patient was so highly sensitive and hysterial that further examination was deferred until the time of operation. An incision in the gum was made directly over the tumor at the apex of the root, the periosteum was opened and laid aside so as to expose the contents. Here were found seven teeth nestling together in a cavity about the size of a denuded peanut. The roots were like the spokes of a wheel radiating outwards, some almost penetrating the gingival margin of the gum projecting above, while others were close to the lower border of the jaw. The cavity in which they were confined was perfectly smooth and without a soc. The roots of the teeth were pointed like tacks and were from one-sixteenth to a quarter of an inch in length. The crowns uniformly being an eighth. They closely resembled small inferior incisors of the temporary set. The crowns of only two showing clear enamel, the others being clump shape with a growth of yellowish color much resembling exostosis. On opening the teeth I found they contained a pulp same as a normal tooth. This beats my record by four at a single birth. Around one of the largest teeth was a soc highly inflamed filled with fluid, and from this, no doubt, the trouble arose.—*Dominion Dental Journal.*

METAL PINS for use in the roots of pulpless teeth as anchorage posts may be made of platinum alloyed with iridium, gold alloyed with platinum. or of stiff German silver wire, the latter being, of course, much less expensive but not quite as reliable for the demands in all respects as the two first named. This wire in several different sizes (say Nos. 3 to 7 of bur-gauge) should always be at hand, and before being used a shallow screw thread should be cut upon it merely for the purpose of giving proper hold to whatever plastic material may be used in connection with it. The writer prefers to select a screw a trifle smaller than the calibre of the prepared root-canal, and cement it in place with zinc phosphate, rather than use a screw slightly larger than the canal, depending upon the thread cut in the dentine by screwing it in as some operators do. What has been said above against the use of zinc phosphate refers, of course, only to its use in locations reached by the saliva. Stiff German silver is not as rigid as the other wires referred to, but will always answer if two roots can be utilized, a pin being placed in each. It is not affected by mercury, nor is ordinary clasp metal—gold and platinum—by the proportion of mercury in amalgam, though pure mercury will sometimes affect it slightly. Still German silver has been referred to because there are two varieties of the metal obtainable. The largest round bar used in preparing the root canal for the reception of the metal pin should be measured in the bur-gauge, and a pin just one size smaller selected for use.—S. E. Davenport, D. D. S., M. D. S., in *N. Y. International Dental Journal.*

TREATING PULPLESS TEETH.—What does scientific treatment really consist of? As I understand it, the crowning point of all scientific treatment is the result. If the result is favorable, than we want nothing in the way of science than that, so far as treatment is concerned. You may say that there may be germs and spores left here and there, but supposing they are put in such a condition that they are unable to accomplish any harm. I think there is hardly anything ever put into the roots of teeth, or into the canalicula of the dentin, that will always remain aseptic, or keep its parts absolutely in that condition. Still we have teeth that have been going on for twenty-five and thirty years, and with the modern treatment we have had teeth going on for ten and twelve years without the slightest disturbance. Do we want anything better than that?

I wish to call attention to the treatment of roots of teeth which I have advocated and which I have practiced for at least ten years; and I have yet to see, I am almost ready to say, one single failure in that treatment. They are so few that they are hardly worth mentioning. The treatment in short is as follows: the moment the tooth is opened the canal and contents are put under the influence of a powerful antiseptic, and kept that way from that time on. It is not allowed again to become septic. Before the patient leaves my chair the root and tooth are filled. I do not dry the canal, but carry the oxichloride cement into the antiseptic, with which it mixes, and the mass crystallizes, thus forming a permanent filling. After thus filling the canal, the crown is filled with gold or other material as I choose. Gentlemen of long experience will agree with me when I say it is almost an impossibility to dry canals of many teeth in the mouth. Many have gone so far as to attempt to dry them with hot air, with I believe not the best results. Not only has hot air been used to dry pulp-canals, but with the expectation and avowed purpose of drying the substance of the dentin itself, the claim being that by so doing the canals and canalicula were thoroughly sterilized. Is this ever accomplished? Is there anything in it that commends itself to a man of experience in the treatment of pulpless teeth? I think not.—Prof. Frank Abbott, in American Dental Association.—*Welch's Monthly.*

CATCHING COLD.—The "cold spots," meaning the surface areas peculiarly susceptible to cold, are principally the nape of the neck and the lower part of the back of the head, the front of the abdomen and the shins. The acute discomfort and the sense of impending disaster which results from the steady play of a current of cold air on the neck from behind are well known. The necessity of keeping the abdomen warmly clad is also generally recognized, though perhaps not as generally carried into practice. Curiously enough, few people are conscious of the danger they run by exposing the usually inadequately protected shins to currents of cold air. This is usually the way in which colds are caught on omnibuses. When driving we take care to cover the legs with a rug or water-proof, but on the more democratic conveyance rugs are not often available, and the reckless passenger by-and-by awakens to the fact that the iron has entered into his soul—in other words, that he has "caught cold." People who wear stockings, such as Highlanders, golfers and cyclists, invariably take the precaution of turning the thick woolen material down over the shins, the better to protect them against loss of heat, though, incidentally, the artificial embellishment of the calves may be altogether foreign to the maneuver. This is an instance of how all things work together for good. It does not, of course, follow, because some areas are peculiarly susceptible to cold, that a chill may not be conveyed to the nervous system from other points. Prolonged sitting on a stone, or even on the damp grass, is well known to be a fertile source of disease; and wet cold feet are also, with reason, credited with paving the way to an early grave. *London Medical Press.*

THE SENSE OF TOUCH.—Of all the senses, touch is the most exquisite and reliable, and the most susceptible to improvement. And of all parts of the body the finger tips are the most wonderfully sensitive and discriminating in carrying impressions to the brain. In some trades experts in this faculty are paid high salaries for their services. The solidity, fineness, or sharpness of grain, the surface, texture, or ingredients of mixtures or solids, and the value of minerals, earths or other materials of nature or manufacture, are largely ascertained by the touch. The blind are notable instances of the marvelous degree of cultivation to which this may be carried. Its promptness, precision and practical value is astonishing. The fingers of the dentist are wonderfully educated in this direction. With remarkable accuracy he judges of the condition, structure and varied phases of healthy or diseased tooth substance, though he only feels it through the point of an instrument. The physician judges of the condition of his patient largely by the sense of touch. Even hidden structures are thus diagnosed. It is by the high cultivation of this sense of touch that the painter, musician and artisan attains distinction. No other sense gives pleasure or pain; for it is only to slightly increase a touch or pressure that gives pleasure, to have the sensation one of pain. In fact, the only cause of physical pain is undue pressure on the nerves, and the only source of physical pleasure is the thrill of the touch that is agreeable.—*Welch's Monthly.*

THE ANTISEPTIC PROPERTIES OF SALIVA.—Hugenschmidt (*Ann de l' Inst. Pasteur*, October, 1896), has made an attempt to determine why operations on the mouth are so seldom followed by infection. He was not able to prove that the saliva possesses any permicidal power. The more common bacteria grow rapidly in it. Nevertheless, it has a twofold mechanical action to keep down infection. It dilutes and washes away alimentary material, and by its alkalinity it prevents fermentation.

But Hugenschmidt thinks the saliva possesses the power of stimulating diapedesis in the numerous lymphatic organs situated in the mouth. Even in its normal state the saliva contains products of the secretion of microbes, and thus favors the phagocytic action.

This hypothesis the writer upholds by several experiments. One of them was the introduction of small glass tubes into the abdomen of the guinea pig. These tubes were closed at one end and filled with saliva. In eight hours it was found that the leucocytes had crowded into the open end of the tube, forming a plug about two mm. in thickness.

In a second experiment, a small portion of the mucous membrane of the lower jaw of the guinea-pig was resected and its base mangled with a curette. In twenty-four hours the wound was covered with a layer of leucocytes, in the interior of which were found bacteria of various sorts, apparently of the same sorts as those in the saliva. From these, and other experiments, Hugenschmidt concludes that the saliva has no germicidal power, and that the freedom from infection of wounds in the mouth is due to active phagocytosis, brought about by the power of the saliva to stimulate the diapedesis of leucocytes.—*Medical News.*

A USEFUL FLUX.—A flux that is exceedingly useful in bridge-work is prepared as follows:

Put in a cup—

Boracic acid	1 oz.
Ammonia	½ oz.
Carbonate of ammonia	½ dwt.
Bicarbonate of soda	2 dwt.
Water	4 oz.

Boil till the fumes of ammonia are no longer given off.

Coat the bridge or other work all over the gold with the flux. Heat it over a spirit lamp to dry it on. Give it another coat, if needed, leaving no part exposed. Then scrape off where it is desired that the solder shall flow, and it will go nowhere else. The work will come out of the heating as bright as when it went in, and the solder will be smooth. The polished surfaces will not be corroded or blackened.—*Western Dental Journal.*

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ARTICLE I.

THE PATIENT.

BY CHAS. T HOWARD, D. D. S., ROCHESTER, N. Y.

Read before the Rochester Dental Society, January, 1897.

It is not with an idea of giving many new thoughts that this short paper is presented; but rather to bring to your attention in a formal way thoughts that have at times come to all of us, and some that have before now been casually touched in discussions by this society. Thoughts that flit about in a haphazard manner are often arrested and their true value found; but the chances that the true germ lying in them will be captured and its essence extracted are increased many fold by an avowed purpose to chase it down.

It is too much to expect all of our efforts to count. We must do a great deal of rattling around apparently for nothing in order to finally reach the mark. After the mark has been attained we look back and find to our amazement that what we previously considered useless beating of the bush was a necessary and vital preparation.

To successfully deal with man you must study him, his disposition, pedigrees, form, training, habits, present conditions and surroundings; just as the horseman does with the horse, only a little more so. You would be surprised how the skilled trainer of animals will "size you up," as it were, at your true natural value, as to what he can do with you, and how he can get you to do it. Of course he is not always correct, but he has rather a good basis to work on.

Thus it happens we should give attention to a few little matters outside the filling of teeth in order to reach the highest attainments in getting teeth to fill. And right here let me say you could study yourself while you are studying others. It will greatly simplify the latter.

The professional office should be a place where absolutely disinterested honesty rules. It is held that people should be honest without expecting to be paid for it. Experts are engaged in proportion to their trustworthiness. The professional man is an expert in the eyes of the people. He is paid for being disinterestedly honest. And his clientage and fees will be enhanced in proportion as the people recognize this in his opinions and advice. Every new patient weighs your advice and opinion and compares its weight with the specific gravity of disinterested honesty; determines the proportion of adulteration, such as grasping after dollars, etc., and makes a mental estimate of what it is worth. Perhaps they will decide to see you later, and perhaps not. Your treatment of the patient is absolutely in your hands, and the patient's treatment of you is largely so. You need skill in both directions, though you are not the only party who administers treatment. Part of the treatment is in your hands, the other part is on your head. The people's chief skill in securing professional services is aimed at finding this very item—disinterested honesty. And it is a sorry spectacle, indeed, that is presented when we look for the degree of skill they possess in this direction. But, nevertheless, the chances are their skill will detect your trustworthiness and their experience will find out your skill.

A person comes to you who knows little or nothing of the teeth, so far as it concerns a dentist. Be very careful how you treat such a one. First impressions count high. Whether that person ever comes to the office again or to any other dental office for nothing except extracting will depend largely on you. It may not be one that causes a large source of income to loom up in your horizon, yet remember great changes take place in a short time these days. If you treat such honestly and fairly you will find some of the least promising supports will prove your mainstay in after years. They are the ones who will measure things by very practical standards.

Be honest enough to treat all patients as though you expected to see them again, or that you expected your brother practitioner would see them. Not that you want to turn them over to another, but you had rather they would do that than to ever after hold and express an opinion derogatory of the entire profession. It is just as holden on you to sow, in all new soil presented, seed that will grow and blossom into honorable estimates and opinions of the profession at large as to produce confiding trust in your individual ability to honestly render valuable services.

A person comes to you with a tale of woe about treatment received from the hands of your fellow practitioner. Be careful what judgment you fling out or scatter in the reach of those ears. A story-monger is just as ready to retail the castings from one tongue as from another. Measure well the portrayal from those lips of the treatment given, and carefully gauge the degree of sincerity in feelings of resentment shown, and severance of former ties, before launching forth in confidential denunciation. My ultimate advice is, don't launch at all till you know the water, make a faithful effort to find and point out extenuating circumstances. We like, and are apt to trust, the man who tries to find and sees good in others. Such human jewels have little room for jealousy and the patient knows it. Too harsh words against the dentist formerly employed will often land you in as awkward position as to unite with a mother who is denouncing her child in general for some special offense. You will find the governor of the old ladies' cudgel a vascilating affair. The direction of blows is liable to change at any moment, and a hasty retreat will be in order. You can injure yourself by the way in which you show a patient their loss at the hands of another dentist. Remember this,—there is always a chance of lurking suspicions of jealousy, and a premature exposure is liable to have a wonderful back-action attachment. The patient with such things in mind is looking you through, aided by the best psychological X ray at his command. He is hunting for honesty, for skill, and for value received. He knows that he is the one to suffer if these things are wanting, so his eye is constantly on the watch. The patient is also looking for kindness, gentleness and becoming consideration. He will demand exceptional technical skill as an offset to roughness, and unimpeachable integrity to balance up bluntness. At times he is exacting; again lenient in the extreme. All his changing moods the would-be dentist must learn to meet. And like the business man, he should seek out the mysteries of artificial nature as shown forth in his fellow men.

To work a machine, oil it well, tighten securely, start it confidently; to work a man, oil abundantly, tighten cautiously, start him with fear and trembling.—*Odontographic Journal.*

ARTICLE II.

ECONOMY IN DENTAL PRACTICE.

BY R. E. SPARKS, D. D. S., KINGSTON, ONT.

Read before Eastern Ontario Dental Association, July 7th, '97.

The great social question of the day—the question which agitates the minds of all social reformers, and stares in the face all statesmen is, how shall the masses be fed ? We can not close our eyes to the fact that this problem must soon be solved. The young men who rush into the profession thinking that, as far as they are concerned, they have solved it, will find some fine day that the question which had appeared as a molehill has become a mountain, that the question will include themselves. The rapid development which has taken place upon this continent in the last century has made a great demand for labor. That demand has made wages of all kinds high. But that development has about reached its high-water mark. Take, for instance, the tremendous amount of labor, manufacturing and business created by the building, equipped and operating of the net-work of railways and telegraph lines over the continent; to this add the thousands of villages and towns, and many of even large cities, which have sprung up during the time mentioned. To this again add the clearing up and bringing under cultivation of, and providing buildings for, the farms which provide food for the millions who have been attracted to this continent from the overflow of the old world. War with all its extravagance and devastation is, we hope, through the influence of Christian enlightenment largely a thing of the past. All these influences tend to lower the demand for men and increase the supply. This decrease of demand and increase of supply is bound to lower the scale of wages. This lowering of wages will apply to all classes, from the navvy who digs a ditch to the judge who sits on the bench. Labor organizations may fix a schedule of wages, professional societies may attempt to regulate the fees of their members, but remuneration for services will be governed not by the value of the services rendered so much as by the demand and supply of the servants; already we are feeling this in the dental profession. We see and hear discussed ways and means of excluding the hordes. This cannot be done. The lowering of remuneration for manual labor drives many into mercantile and professional pursuits. You may raise the standard of matriculation, lengthen the term of tuition, increase the college fees and stiffen the final examination. All these conditions will be met and fees will come down as in all the trades and professions. This is not a plea for a cheap dentistry, nor any apology for the lowering of fees before there be a necessity for it; neither is it an insinuation that we are too well paid for our services. It is only a prospect of what I consider an inevitable condition in the not very far future. How to meet it is a question of no small importance. The only way it can be met in my opinion is by economy. There is no doubt but that we on this continent are most extravagant livers, indulging in luxuries which the same class of Europeans would not dream of.

The one redeeming feature of the lowering of wages in competition is, it lowers the cost of production; so that while the purchasing power of the masses is reduced, the purchasing power of a dollar is increased. This is not so noticeable in the dental office as in the home. Still, where our material and instruments are expensive, the lessening of the cost becomes a factor in profits of a year's practice.

Combines may be formed, and every effort made to keep up prices of goods. They must come down. Already they are on the move. Price lists are being circulated with the announcement: "Reduced from —to

—" This reduction ranges from 6¼ per cent. as in the case of gold foils, to 23⅓ per cent. as in the case of some cements and alloys. Some of the manufacturers would fain have us believe that it is their magnanimity being manifested, that it has merely been a question of how soon and how much. As we have watched them corner the platiuum market and advance the price of teeth, form combines to keep up prices of goods, it has appeared to us that it was rather a question of how long and how little. But leaving the necessity of economy out of the question it may be profitable to consider the subject as a matter of policy. While few of us expect to amass wealth from the practice of our profession, we all hope to lay up a little for a rainy day, or for that time which must come to us all, when the eye grows dim and the hand begins to lose its cunning, when we begin to see our patients leave us for our younger and more active confreres.

In no case more than in the dental office and laboratory is realized the truisms, "wilful waste brings woful want," and "economy is the sure road to wealth." It is not the amount a man earns as much as the amount he saves that governs his financial standing. Granted that economy is desirable in dental practice at all times, the question arises, how can we economize? First, in the selection of an office. It is desirable to have an office in a respectable part of the town or city. But there are in every city locations where office rents are nearly double the rent for the same accommodation in any other part, which, for dental purposes, may be just as desirable. Then the selection of an office governs the saving or waste of many things that are valuable to a dentist. The rooms should be compact so they may be more easily heated; for the fuel bill in a Canadian winter is no small item. Besides compactness and convenience of arrangement saves time and strength, both of which are important items in the dentist's stock-in-trade. The office should be well lighted. The fine work in an obscure location makes no ordinary strain upon the eyesight under the most favorable circumstances, but to operate in a poorly lighted office is an imposition which no ordinary eyes will tolerate for many years. The best light can generally be secured in upstairs rooms. The office should be away from the residence to avoid having to work at unseasonable hours.

We should practice economy of strength. The dental profession is considered to be one of the most unhealthful of occupations. Close confinement, close application, breathing the breath of patients, and in many cases of those diseased in lungs or schneiderian membrane. In many cases, long hours operating during the day time and doing laboratory work or attending to books and correspondence at night; all this tends to bring on indigestion, constipation, hæmorrhoids, headache and neuralgia from overworked eyes and brain. The laboratory should be close to the operating room to save unnecessary steps. In no case should the laboratory be on a different flat from the operating room. As the basement kitchen is an abomination to a residence, so is a dental laboratory above or below an operating room.

The arrangement of a dental office and the care of a dentist's health would make fruitful subjects for lengthy papers. Therefore we cannot more than mention them here; the object of this paper being more directed to the little wastes which may take place in a dental practice. Time may be saved by carrying the work along so as not to have to wait for anything; for instance, if two impressions have to be taken for the same individual, take one and run it. The cast will be hardening while the second impression is being taken and run. The second will harden while the first is being taken from the impression, and an articulating plate fitted. When the articulation is taken run it and it will harden while the teeth are being selected.

Having ground and articulated the teeth, wax and invest one set. By the time the second set is waxed and invested the first will be ready to wash out and pack; when this is done the second will be ready and may be washed out and packed while the first is heating preparatory to being closed; while they are vulcanizing other work may be gone on with.

Much material may be wasted. It is an easy matter to mix twice as much plaster as is needed for an impression or investment. A case may be waxed much thicker and covering more space than is required for the plate, making a waste of rubber and time in finishing up. Much gold may be wasted in finishing gold plates. crowns or bridge-work. Often much more solder is used than is necessary for the strength or finish of the piece. In finishing gold work, if dry corrundum or carborundum stones are used while grinding down the solder and the piece held over a paper or other receptacle, or if wet stones are preferred, or bowl containing water be used to wet the stone and wash off the piece occasionally, one will be surprised at the accumulation of grindings. The fine sand-paper or emery cloth used for rubbing down gold work and the strips and disks used in finishing gold fillings should be saved and burned and the ashes preserved. Sheet wax may be easily and economically made. Quite a saving of gas may be made by watching carefully the heaters and waxing burners. It is quite possible to make the gas bill what it need be. Great waste may be made in the careless mixing of cement and amalgam. One not infrequently sees more cement remaining upon the mixing slab, or more amalgam upon the bracket, after the operation than was used in the fillings themselves. All amalgam scrap should be saved, as it is easily refined and recut. Sweepings of the operating room and laboratory could profitably be kept, as they are readily bought by the refiners. I have heard of old carpets off operating rooms being sold for more than enough to purchase new ones. I have never been able to negotiate an exchange so favorably. Possibly because I have my carpet beaten twice a year; but I have often intended having it rolled up and opened out upside down upon sheets and so beaten, to preserve the gold finished off fillings; I feel that it would be a paying precaution. Rubber dam which has become too full of holes to make it safe to use, may be made as good as ever by patching the holes with a little of itself rubber cement. Towels used for protecting the patient's clothing are worn out more by laundrying than by use. They may be used much longer without being laundered if, instead of wiping our instruments upon them while operating, we wipe them upon a mouth napkin, which answers every purpose and which costs relatively nothing. In the use of nerve broaches we may be extravagant. We may buy them at $3 or less per gross, or we may pay $7 or $8 for the same number. With care the one grade will answer about as well as the other. But whatever grade we use we may destroy many more than are necessary. In ordinary cases one broach will remove several nerves before the barks are stripped off, if it be only used for the removal of the nerves. As soon as it has done its work it should be cleansed and laid away for another time, and others which have lost their usefulness as extirpators may be used for washing out the canals, and when they have become so smooth as to refuse to hold a twist of cotton, they may have their points snipped off and be further used for nerve canal pluggers.

That pet ligature, floss silk, may be replaced by gilling twine, of which we may buy as much for 50c. as of the former for $5. When using a ligature it is usually required upon three or more teeth. We are directed to prepare one for each and to tie a knot to go on palatal or lingual side of the tooth to prevent the rubber from slipping off. Prepare one ligature; knot it if you wish, tie it on one tooth, cut off the ends close to the tooth, tie the ends together and proceed with as many teeth as it is necessary to ligate. It is profitable to purchase time-saving instruments and devices; but let us not buy everything that is offered for sale or we will find our laboratory and closet shelves loaded with rubbish only to turn up at house-cleaning time. Thus by a little care and attention all the way along the line, and we have only taken time to mention a few representative points, we may make the expenses of the dental practice about one-half what it may be by carelessness and extravagance.—*Dominion Dental Journal.*

ARTICLE III.

PLANTATION OF TEETH.

BY DR. LOUIS JACK, BEFORE THE ACADEMY OF STOMATOLOGY.

The planting of teeth is devisable into three classes:

1. *Transplantation*, where teeth removed from one subject are with proper precautions placed in the alveolus of another immediately after the extraction of a diseased or fractured tooth.

2. *Replantation*, where any given tooth of a person for various reasons may have been removed, and, after certain manipulation of the tooth and treatment of the socket, replaced.

3. *Implantation*, where an artificial alveolus is made by trephining the process at a vacant place, in which opening a suitable natural tooth is introduced.

Transplantation has been credited to Dr. John Hunter, but undoubtedly had been done before him. Directly after his demonstration of the feasibility of the procedure the operation was frequently performed in England, France, and to some extent in this country. The required conditions at that time were that the tooth to be transplanted should in size and form be as near as attainable the same as the one to be substituted, and necessitated one person, for a consideration, to yield the organ for the benefit of another. The removal of the tooth and the substitution were made immediately, it being considered essential that the operation be done under conditions favoring direct union.

This operation soon fell into disuse for reasons which are now clear. Dangerous inflammation frequently occurred by the transmission of disease from one subject to another, and more frequently, probably by introduction of pathogenic germs, serious disorders, sometimes followed by death, ensued.

Apparently the first described attempts in this country of the transplantation of dried teeth which had been long removed appeared in a paper, by Dr. S. P. Cutler, read before the Odontological Society of New York, January 16th, 1877. An abstract of cases is that two waste upper bicuspids were inserted side by side. After six months, on account of pain in the maxilla, the second bicuspid was removed, requiring considerable force to displace it. The first was permitted to remain.

Case II.—A first bicuspid was removed; the roots broke off, were then drilled out, and the septum of bone between them drilled away. An old tooth was fixed in the socket, which, after ten months, was firm.

Here, in passing, occurs not only the earliest attempt to use dried teeth, but also, by drilling the socket to change the form, the first suggestion of implantation appears.

For the report and discussion, see *Dental Cosmos*, vol. xix, p. 258 *et seq.*

It should be noted here that John Hunter stated that many dentists prefer dead teeth, and, further, that he had seen dead teeth become perfectly firm after insertion, and do service for many years.

Replantation is not traceable to any authority for its beginning. It probably had its rise in the natural tendency to replace teeth dislocated by accident or removed by mistake. Our literature shows that for this purpose it was generally successful without the care which would now be exercised to insure a safe result. Within recent periods it has been performed as a means of effecting the the cure of chronic alveolar abscess and other disorders of the root. The results have generally been reported as curative. This practice has been confined to the more careful and judicious practitioners, which is borne out by an examination of the literature of replantation.

Successful treatment in this manner and for this latter purpose became coincident with the scientific practice of aseptic surgery. Without careful consideration of the application of the principles governing asepsis, replantation in disordered conditions of the teeth and peridental membrane would be as liable to failure and as dangerour as transplantation in the previous century.

The *rationale* of the treatment here would appear to be, if we exclude the influence of shortening the root and occluding the root-canal, that the traumatism induces for a time an acute or subacute condition for the previous chronic one.

The relation of failures in replantation and transplantation previous to 1885 should be ignored. A tooth extracted and handled necessarily becomes an infected thing, and without disinfection its presence in the tissues of the alveolus involves a continuous struggle between the vital forces of the part and the development of bacteria. But through all these influences occasionally replanted and transplanted teeth remained for many years. I know of a man who had an inflamed lateral incisor removed. The pulp had been devitalized. Deploring the loss, he replaced it on retiring for the night. On arising it had escaped. Not to be outdone, he tore from his handkerchief a narrow part of the selvage, and with this tied the tooth to one of the adjacent ones. It remained for fourteen years.

Implantation was undoubtedly originated by Dr. Younger, whose claim has not been publicly disputed. The date of his first operation was June 15th, 1885. The general procedures of this operation as practiced by him are so familiar that it is needless here to repeat them.

The result of the fixation of an implanted tooth when it has been properly adjusted and held in position has become indisputable. The evidence presented by men of reliability and sincerity of purpose has too much accumulated to fail to be convincing as to the feasibility of implantation.

There are certain requirements already established which govern success. The artificial opening must have the depth to give correct occlusion, and be but little larger than the root of the tooth to be inserted. The opening in the gum should be smaller than the cross-section area at the cervix of the tooth. The mouth should be disinfected. The operator's hands and all instruments must be put in an aseptic condition. The tooth should be rendered impersonal and aseptic by being heated in a disinfectant fluid. The tooth should not have shreds of peridental membrane on it, but should not be scraped clean of the adherent portion of the membrane. During intervals of the operation the socket should be filled with a tent of the antiseptic fluid in use. When the tooth is inserted it is better that some force be employed to push it into place. It should then be securely fixed in position by some means which will give immobility.

With the exception of the formation of the opening in the gum and the trephining of the process, implantation has no essential differentation from the requirements governing transplantation and replantation.

With this outline I will proceed to describe the methods I have pursued in the cases under my care.

The most important qualification connected with these operations is the means to secure thoroughness of asepsis. The usual reliance has been on bichloride of mercury. I have avoided its use on account of its irritating influence and its depression of the vital force of the tissues, and have relied on the aqueous solution of hydronapthol and the aqueous solution of acetanilid.

The former is souluble in the proportions of 1 to 300.

The latter is freely soluble in the ratio of 1 to 200. To effect the solution of hydronaphthol it is first dissolved in alcohol, when it becomes entirely miscible in water. In these proportions neither is irritating to the tissues, and, when heated, thoroughly effect the disinfection of the tooth, the hands, and instruments. The importance of heating disinfectant solutions to increase their power has been well established. (For example, with bichloride of mercury 1 to 20,000 of urine at 104 degrees F. prevents fermentation. Anthrax spores lose their infecting power in weak solutions of the ordinary antiseptics at 170 degrees F.) I place the tooth in either of the above disinfectant solutions and raise the temperature to the boiling-point. The instruments likewise are heated in the same manner. These and the tooth are kept in the fluid in the intervals which occur during the surgical procedures.

Generally I have subjected the selected tooth to this process for a short time after opening the pulp-chamber to disinfect the root canals.

The importance of securing immobility of the planted tooth cannot be overestimated, since the structural changes which produce the union of the tooth cannot be expected without a state of rest. It must be as essential here as in fractures, for the process of ankylosis must be analogous to the process of the union of bones. Therefore, I emphasize the necessity for the absolute fixation. I take an impression in plaster, and on the cast make a study of the case. The tooth is fitted in the plaster to correct relations with adjoining and occluding teeth. It is then secured in place, when a metal cast is taken, and on this is fitted a gold splint of whatever form and with whatever attachments may give stability. This is secured by clasps or by wire ligatures to the other teeth at the cervix. Additional security and cleanliness is effected by setting it in place with oxiphosphate.

For the front teeth, which are the most difficult to fix, I open into the pulp chamber on the lingual surface and insert a wire parallel with this face. The splint is formed to pass between the pin and the tooth. This, if the splint is secured to the adjacent teeth, establishes the fixation in each direction.

These mechanical preparations may appear to some to be unnecessarily tedious. In a question where success depends on careful observances these precautions are essential.

To protect the surface of the root from injury during these procedures, it is covered with a strip of mucilage paper wrapped on it, or a layer of floss silk. To prevent drying out, the cast is covered with damp paper or kept in a box among damp paper.

The final operation on the mouth is simple, and is speedily done. It is preceded by every aseptic precaution.

In respect of replantation and transplantation, I invariably have broken up the remains in the alveolus of the peridental membrane. My impressions have been that this places these cases in the same relations which occur in implantation. The grounds for this procedure are that the experience of those who have replanted and transplanted teeth were of very frequent failure by early resorption, while the implantations when carefully performed have given favorable results.

I have implanted four cases; of these, three became fixed with apparent calcific support

No. 1. Right upper central, male; operation April 20th, 1889. In a few months it became firm and remained so for six years and five months, when it suddenly became loose and fell away. At the time of the operation the patient was in good health, but for a year or more before the resorption he had failed in vigor.

No. 2. Right upper lateral, male; operation January 12, 1895. The tooth became attached quickly, and is now resonant.

No. 3. Right upper central, same patient as No. 2; operation same date. On account of the occlusion of the lower tooth on the tongue of the splint, secure attachment failed. It was removed December 7th, 1895 when another tooth was inserted. It is notable that the alveolus had contracted as the root became diminished by resorption and required deepening and enlargement to receive the new tooth. The location of these teeth had been edentulous for thirty years.

No. 4. Right upper bicuspid, male; operation April 22d, 1895. Progressed favorably; splint removed in four months. Tooth now very resonant.

My transplantations have been five.

No. 1. Left upper lateral, female; operation October 22d, 1892. Tooth dead; deep pocket on palatal aspect; fistula on gum on labial aspect; apex of root much denuded of membrane and quite loose. Deepened the alveolus and firmly splinted the case; splint removed in five months; calcification was not established till four months afterward. The tooth remains perfectly firm, and is very resonant.

No. 2. Right lower lateral; operation October 10th, 1894. Profound pyorrhea, with much resorption of margins of alveolus; patient not of good health; tooth became fastened by connective tissue, but it failed to become firm and was removed in six months. Here I was unable to attach a splint, and relied on wire ligatures, which were not sufficient to prevent motion.

No. 3. Left upper lateral, male; operation January 12th, 1895. The root here was deeply split, the parts much separated, thus enlarging the alveolus. The gum quickly embraced the root. In a few weeks the tooth became firm; it is now very resonant. Here the face became swollen, with perceptible heat, which quickly responded to treatment.

No. 4. Left upper cuspid, female; operation March 12th 1895. Here the tooth had been nearly disconnected by pericementitis; excessive flow of pus; outer plate of alveolus very much destroyed. The alveolus was fully sprayed with the solution of acetanilid; a tent also of lint saturated with an alcoholic solution of the same was applied for a few minutes. The next day swelling of the tissue about the tooth occurred. The face over the canine fossa was suffused and swollen; refrigerated face and sprayed gum with acetanilid one-half per cent. In two days these appearances subsided; no trace of pus could be elicited by pressure over the tooth. November 9th, after eight months, the tooth being resonant, the splint was removed. This case is remarkable from the extent of resorption of the alveolus, and from the free suppuration consequent on the depth of the pockets.

No. 5. Right upper second bicuspid, male. The tooth very loose from pericementitis; process much resorbed, but no discharge of pus at the time; tooth removed November 2d, 1894; operation twenty days later. The fixation by splint was not secure from disturbance by the occlusion of the lower tooth. There is now no indication of calcification.

Of replantation I have had three cases.

No. 1. Right upper first bicuspid, female; operation November 3d, 1894. Displacement outward by pericementitis, with resorption of outer wall of alveolus. Reformed the socket to secure alignment. In three hours replaced the tooth. Removed splint in six months. The tooth is now firm and very resonant.

No. 2. Right upper lateral, female; operation January 19th, 1895. Tooth disturbed outward and posteriorly, displacing the lip, caused by pericementitis. Deepened the alveolus and reformed it to secure alignment. Management same as in previous case. The gum became slightly inflamed, which passed away in six days, and the splint was removed at end of June.

No. 3. Right upper central, female; a case of pyorrhea with enlargement of the alveolus; operation March 23d, 1885. Here, because the remaining adjacent teeth were not firm, a state of immobility could not be secured. The ultimate attachment is doubtful.

The apparent promising results in teeth deeply affected by the consequences of pericementitis is an important conclusion to be drawn from several of the above cases.

I have alluded to the means taken to keep the root clean and protect the surface from injury. If a protected root apparently free of portions of the peridental membrane be immersed in warm water or a disinfecting solution the surface slightly swells, becomes velvety to the touch, and is viscid. It is a rational conclusion that the glasma effused into the space surrounding the planted tooth must necessarily come into more intimate connection with the tooth in this condition than would be if the root were polished. Moreover, a tooth in the condition stated when removed during the operation for adjustment exhibits a considerable degree of resistance to displacement, which I have attributed largely to this condition.—*Welch's Monthly*.

ARTICLE IV.

SEPARATING TEETH.

A DISCUSSION.

H. W. Morgan: In wedging teeth apart, it has been the almost universal practice for the last ten years to rely on rubber. The improper use of rubber should be condemned. No one familiar with its action or its use as a means for retaining space, would for a moment think of leaving rubber between the teeth longer than from six to ten hours, and it is an inhuman and barbarious practice to leave rubber remain between the teeth for weeks at a time. Six hours in 90 per cent of the cases that come to us is sufficiently long. From six says to two weeks later the teeth should be retained in place to permit all inflammatory action to subside. In getting the cavity slightly excavated or open sufficient to retain gutta-percha, the gutta percha should not extend but slightly over the margin of the cavity, and in working down and crowding the gum away, in adjusting the rubber for the purpose of making the separation, it should not be carried far beyond the point of contact of the tooth if it would crowd the gums away and injure them. The long wearing of rubber excites inflammatory action and brings about the trouble. Packing the gutta-percha slightly over the margin of the cavity is all that is necessary to hold back, and when the rubber dam is adjusted, the gum is carried back and the rest of the operation is made as usual.

Dr. B. Holly Smith, of Baltimore: It is said that a celebrated surgeon, who lived in our town, by the name of Nathan R. Smith, advocated on all occasions a bold and free incision, and on one occasion it is said he had a little carbuncle on the shoulder which required an operation. He called in his son, and the son said, "Well, father, shall it be a bold and free incision?" He replied, "No, my son, cut just as little as you can." I feel that way with reference to the heroic cutting of dentin. If any one were to operate on my teeth, I should want them to cut just as little as possible. The fact is we do not have trouble from any bottled-up microbes in the teeth, it is the fellows on the outside that gives us trouble. The proper treatment of these cases should involve the removal of all the dentin that we see slightly decayed. Dr. Morgan has condemned the use of rubber for the purpose of separating teeth. I do not think rubber should be used to separate teeth, and there is no need of using it and having the patient come back at the end of six hours to change the rubber when other things can be used, and much more satisfactorily. Cotton with silk ligatures can be kept in position. I differ with Dr. Johnson about using gutta-percha between teeth for separation and allowing it to remain for a long time because of the very thing he said, namely, to avoid pressing away of the gum and the destruction of the contour of the gum in the inter-proximate space.

Dr. McKellops: I did not hear the whole of Dr. Black's paper, and so I am not in a position to say much about it. My friend, Dr. Morgan, has condemed the use of rubber for separating teeth, and I wish to say that there need be no fear in using rubber, provided it is placed between the teeth in a proper manner. It is not necessary to wait a week or two weeks to accomplish a separation of that kind. It all depends on the manner in which you apply it to separate the teeth. I have been using rubber all my professional life for the purpose of separating teeth, and I have yet to see a case in which I regret having used it. The same holds true with regard to the application of ligatures for separating teeth. I have had no trouble with them. It is the manner in which these things are applied and the attention that is given to them.

Dr. Gordon White, of Nashville: During all my professional career I have tried to preserve as much of the natural organs that were in a healthy condition as possible. I have always thought that the Creator could beat me in making teeth, so I have only removed the diseased portion of the tooth substance, and have not cut away very much of the dentin of late, as Dr. Black has advocated. I enjoyed his paper and the remarks that have been made on it, by which I am encouraged to extend my cutting beyond what I have done heretofore.

There is no man perhaps to whom the profession is so greatly indebted as to Dr. Black, and I for one read everything he writes with the greatest interest and profit, but I have never adopted the extensive cutting that he has advocated. Some time ago I was obliged to have a slight operation performed on myself, and I had a general surgeon, a friend of mine, do it for me. He was a gentleman for whom I had done some dental work, and he said, "Now, old fellow, I will get even with you." He did not thrust his knife in more than inch or half an inch, and I thought it was about a foot deep. I am a great advocate of not quite so much cutting as has been advocated by the gentlemen who have preceded me

Dr. J. Y. Crawford, of Nashville: I want to speak in reference to the maintenance of the interdental space, or the interproximate space, as it is now termed. Nearly twenty years ago; in formulating a program for our Tennessee Dental Society, I placed on the program the query as to whether the sixth-year molar should be preserved, and one of the best men in our State, who was to open the discussion in response to that query has long gone to his home, leaving many monuments in his community to his memory. He was a good dentist, an honest workman, and very skillful; but he said he did not see why the question should be asked; that he had been extracting six-year molars for patients susceptible to the influence of carious action, and begged to be excused from making any further remark. The members of the society then urged me to make some remarks on the subject, and the first thing I said in response to that query was that the preservation of so-called six-year molars was a precedent and a necessary consideration to properly maintain the interdental space. [Applause.] I have been impressed and instructed this afternoon as I never have before in a dental society, and I must think that if the departed spirits watch over and take an interest in the affairs of men, that the immortal Webb must be looking on this assemblage to-night, for it was he who advanced the idea that in the treatment of dental caries, the cardinal feature was to maintain the tooth in its original shape. Without that you cannot hope to preserve the interdental space.

Dr. W. H. Richards, Knoxville, Tenn.: I am here to learn, and the best way I have found for acquiring information is to ask questions. In a recent conversation with Dr. Black, I ascertained that he does not use matrices. In my reading after Dr. Black, I have come to appreciate the value of the microscope, and particularly what he says in regard to the flowing of metals. I never used to think that amalgam looked like an iceberg flowing from the center gradually out of the cavity. I have been taught by him that such is the case, and it has been constantly observed by other men in the profession that the crushing power of gold on mastication brings about the same condition. I asked him if it was not scientific that a body moves in the direction of least resistance. He says that it does. Now, then, if such is the fact, how can you expect to obtain sufficient pressure against a tooth in the act of filling it, unless you have a matrix held sufficiently firm by a screw or otherwise, so as not to disturb the pressure and prevent that flow that would likely and most naturally occur under the hammer. For my benefit and for the benefit of others, and because he stands out boldly in the profession, I would ask him to explain, if he takes the position he does, if the other is more strictly scientific.

Dr. Black (closing the discussion): I am very happy in the fact that I can get along without a matrix in filling with gold even on distal surfaces. The matrix is always in the way of making good margins with gold.

As to contouring space, what is a sphere except a contour of space, or any other form that we choose to take? Now, as regards the teeth, let us try to take care of what is left of them. It has become simply a question of expediency; the cutting away of tissue that has already become injured is not a question of sentiment. It is simply a question of expediency. How can we produce the best results? Loss of tissue does not enter into it. The arc forms of the seat bring pressure on that or that (illustrating, showing a circular form and a square form) in any direction you please, which will move the quicker? That is all I have to say. It is one of the most important items in the filling of teeth. I care little if your anchorage be slight, if you have your filling well seated it will not move, provided it is sufficiently dense. Will a dense tooth resist the progress of caries and render it slower, or will it be more rapid in a tooth less dense? I do not know except from what I might reason out. We know that chalk will dissolve more rapidly than marble, and I should suppose that a tooth less dense would dissolve more rapidly than one which is very dense. But the difference in teeth is too little for this to account for much. We know from observation and experience that the hardest teeth will be dissolved very rapidly under some conditions, while the softest teeth may be totally immune from caries.—*Dental Review.*

ARTICLE V.

THE STUDY OF ANATOMY.

BY W. C. BARRETT, M. D., D. D. S., M. D. S., BUFFALO, N. Y.

This association has wrought a great work in securing the adoption of something like uniformity of action in the admission of students, and in the raising of the general educational standard. If one would have some comprehension of its beneficent influence, he has but to reflect upon what was the general character of American schools, and what their reputation abroad before the organization of the National Association of Dental Faculties, as compared with the present condition. And yet it has done but a small proportion of its manifest duty. Its accomplishments have been elementary.

It is not too much to say that our professional reputation must be what our colleges make it. We are the educators of those who are to be the leaders in the professional matters of the future. The next generation of dentists will be what we shall make it. Legislators may pass laws to regulate and restrict dental practice, but the stream can rise no higher than the fountain-head, and the practitioner of to-morrow must get his training and derive his professional knowledge from the school to-day. He must enter the profession by submitting himself to our guidance. The colleges are the fountain-head, and the stream will be limpid or foul according to whether we purify or contaminate it.

This should be a proud position. It certainly is a responsible one, and woe betide the college professor who does not realize his accountability. The man who accepts the honor which may appertain to this distinguished station, without striving his utmost to be in every way worthy of it, to fulfill every duty with an eye single to the best interests of student and profession, is unworthy a place in our ranks. He who assumes to arm the young men of our county for the battle of life, to fit them and equip them for an honorable career simply that he may minister to his own good, who takes the teacher's place and ascends the instructor's rostrum from selfish motives, is a worse hypocrite than the preacher whose every-day life belies his own sermons.

I believe that we are all sincere in desiring to make our schools, and through them the profession, all that they should be. To secure this it is not enough that we look solely to the preliminary qualifications of those whom we accept as candidates for a confidential position in American families. We need to make our instruction as perfect as possible. This cannot be done unless there is a generally accepted standard, and some uniformity in system. At present one of our greatest sources of weakness lies in the fact that there is no common comprehension of a standard of methods. One school begins instructions with the alphabet, proceeds to the construction of simple words, and by regular gradations to the building up of sentences. Another commences by an analysis of the sentence into its component words, and then studies the elementary symbols constituting the words.

That is, one teacher is synthetical, and the other strictly analytical. A student takes his first and second year in one school, and then circumstances or inclination cause him to finish his course at another. He commences under analytical teachers, and closes with a school that only arrives at the stage of analysis in the closing year. Hence, in reality that student never reaches the end of any regularly graded course. In this way the practical efficiency of that graduate can never be assured. Let me illustrate this by the various methods of arriving at a knowledge of that nasal study in all schools that attempt to teach the healing art—anatomy.

Some teachers open their course with an examination of the elements of which the human body is composed. That is, they begin with histology. They commence with the cell, and after having given a fair knowledge of that, they proceed to construct the cells into tissues, which are then considered. Then the tissues are built into organs, and finally the organs into the systems which they compose, and they do not arrive at a consideration of the human body as a whole until the last year.

Another pursues the opposite course. He begins with a study of the anatomy as a complete system. He considers its functions, and then goes on to study the organs whose actions make function, and finally to the ultimate elements of which organs and tissues are composed, and whose aberrant functions afford the pathological disturbances with which it is to be his life's work to battle.

The student who spends his first year in a school that begins with histology, and who goes to one that ends its course with tissue elements, never gets beyond elementary matters in his entire college training. This certainly will not tend to make the best practitioners, or to raise our profession to its highest point of efficiency. There should be a comprehension of the benefits of each method, a careful discussion of the merits of all systems of teaching, and an intelligent and discriminating adoption of that which is best. To this end I have accepted the invitation of the executive committee to bring this subject before you.

I am a believer in the analytical system. I think it is easier to arrive at an understanding by taking in pieces that which we do not construct, and thus get at a knowledge of the mysteries of that which we must attempt to repair. Let me give you my reasons for this faith, and then please allow me to listen while you show me wherein I am wrong, or confirm my prepossessions by your own corroborative testimony. Do not then understand me as speaking dogmatically when I propose the following methods in teaching anatomy, but only as offering suggestions.

Our sole reason for examining tissues and organs is that we may learn their action and function. Hence, we should begin with function. This requires that the preliminary examination should be of the system, and not of its organs. The study of anatomy, then, should commence with a general examination of the body as a whole. In a dental school the first year should be devoted to general anatomy, beginning with osteology, or the framework. Then the viscera should be taken up, and their general morphology and function should be studied. This should be followed by myology, syndesmology, and neurology, that a fair idea of the whole body may be claimed. Practical anatomy should be commenced this term, and one extremity dissected. It has sometimes been urged that the student should not dissect until he has learned something of anatomy. This argument would be cogent if the object were to learn how to dissect. But we dissect to learn anatomy, and do not learn anatomy to discover how best to dissect.

All the study of this year should be general. Not a hint of any specialty should be given, and hence the teacher for this year is preferably a medical man. If he is a dentist, he is apt to introduce his specialty too early. The general study of the human body should be finished in the freshman year.

In the second, or junior year, the student begins to differentiate in his study. He should now take up regional anatomy. He has furnished the study of the body as a whole. Not that he has learned all that he should, but he has devoted all the time that can be spared out of a three years' course, and he takes up the study of the part to which he is to devote his attention as a specialist. His field is bounded below by the clavicle, and he must have a special, definite, intimate knowledge of all above that.

As a part of this he commences the study of dental anatomy. The first step in this is comparative dental anatomy,—that is, the study of the dental organs as a whole, precisely as he began the first year in general anatomy. The dentist who learns nothing of the general relations of the teeth, and whose comprehension of them is only that they are organs out of which he is to pick his living, cannot claim any scientific knowledge. The teeth in all the different classes of animals should be generally studied, until the dentition of man is reached, when his teeth should be intimately studied in all their anatomical relations. The anatomy of the second or junior year is, as a whole, devoted to organs, as is that of the first year to systems.

No man can finish the anatomical studies necessary to dental practice in two years. He imperatively needs the third year, and this should be given up to careful examination and investigation of tissues. In this year the microscope is a necessary adjunct. The student has now learned enough of function to comprehend how it modifies, or is modified, by structural development. In this third and finishing year he does not entirely confine his attention to histological anatomy, but he continues regional anatomy, because he isnot yet sufficiently familiar with the organs, especially ofthe head. He also bestows considerable attention upon surgical, and morbid, or pathological anatomy, and he thus finishes his course by attention to the minutiæ and detail for which he is unprepared during his first or second year, because he has not then the general knowledge to allow him fully to comprehend it, and because his mind usually is not sufficiently trained and disciplined to give him mastery over his attention.

The student who thus advances by regular gradations each year, separately taking up and mastering a definite branch or part of the subject, will be likely to retain his knowledge, because he has advanced toward it by a direct route, and because each division is made subsidiary to the next, and there is a regular gradation and progress.

If such a syetem, or if some other regular system, can be adopted in its general features by all of our schools, the grading of one who for any cause changes his college during his course will be greatly facilitated, and he will not be likely to miss any of the subdivisions. Our graduates will be better qualified for practice, and the tone of the profession will be elevated.

I would pursue the same general plan in the study of chemistry and physiology, the other basal studies of the theoretical curriculum. They should extend through the entire course, the last year in each to be devoted to special instructions adapted to an exclusive dental practice.

Materia medica should begin with the first year, but therapeutics cannot be profitably commenced until the student has obtained some knowledge of drugs, and hence it becomes a second- and third-year study, materia medica extending over the first two years.

Embryology properly belongs to the second year, because its study demands an acquaintance with technical terms that are all unfamiliar at the outset, and because it is an intricate and involved matter which requires a disciplined attention. Aside from these, there is no reason why it might not be begun with the freshman year.

Metallurgy is a second-year study, because its consideration demands a good acquaintance with general chemical laws, and these are acquired during the first year.

Surgery is a third-year study, because it demands not only a complete knowledge of anatomy, but a trained hand and absorbed attention as well. The student should begin the study of surgical pathology in the second year, and it may perhaps form a part of his general pathological studies.

Pathology should be differentiated from operative dentistry. They have very little in common, save that each may be curative. But operative dentistry is wholly mechanical and manipulative, while pathology should cover all medicinal and general treatment. Operative dentistry is largely prophylactic, while pathology is so to but a slight degree. Whatever has to do with the action of drugs, whether generally or topically applied, belongs to pathological practice. In the treatment of alveolar abscess, for instance, operative dentistry has very little part, its practice being confined to that which is mechanical, or that which is done with instruments. I believe that in the past we have not sufficiently distinguished between the two. A sharp line of demarkation should be drawn between that which is mechanical and that which is therapeutical.

. It will be seen that I have not attempted to assign any place to the practical part of dentistry. My subject was the teaching of anatomy, but I have thought it not inappropriate to suggest some thought concerning other didactic studies.

Let me repeat that I have only considered the matter tentatively, and realize as fully as any of you that there is room for much consideration and extended discussion before the various studies in our curriculum shall each have been definitely assigned its appropriate place.—By Courtesy of F. L. Hise, of *Dental Cosmos*.

ARTICLE VI.

HOW AND WHY WE TREAT AND FILL ROOT-CANALS—OUR WAY.

BY W. A. MILLS, D. D. S, BALTIMORE, MD.

HOW WE DO IT.

If the root-canal is one from which we have removed the pulp, after having destroyed its vitality with arsenious acid, using the following formula:

℞	Arsenious acid, -	grs. xv
	Acetate of Morphia, -	grs. v

M et. Add sufficient wood creosote to make thin paste; afterwards add enough powdered alum to make a stiff paste.

Or, as we sometimes do, devitalize with a red-hot instrument; again, a straight drill rotated rapidly, producing friction enough to accomplish the desired results.

We swab out the root canal with a saturated solution of tannic acid in glycerol, after which we heat a tiny piece of gutta-percha, and pass it gently to the apex of the root; then we fill the root-canal with any of the filling material, preferably cement. This treatment we give all root-canals where we can reach the apical foramen; and where we cannot, (as instanced in contracted or tortuous root-canals,) we force the tannic acid solution into the inaccessible pulp tissues, after which we fill in the same manner as in the accessible cases. In these cases no systemic conditions are considered.

When the pulp has died from any cause otherwise than that intentionally produced, we proceed, viz., at the first treatment we remove all carious and liquid matter from the pulp chamber, being cautious not to enter the root-canal.

We then saturate a pledget of absorbent cotton with Marchand's peroxid of hydrogen; place it loosely in the pulp chamber; selecting an old steel instrument with sufficient face at the point to fill, or nearly fill the entrance to the pulp chamber, we heat it red-hot and place it upon the pledget of absorbed cotton.

Immediately steam is generated, oxygen is set free, both filling the root-canal with considerable pressure; this is repeated three or four times, or until the patient says heat and pressure are felt within the tissues, outside of the apical foramen.

We then cleanse the root-canal, after which we saturate a roll of absorbent cotton with a solution of equal parts of the tinctures of iodin and aconite, or tincture of iodin alone, and work it into the root-canal, behind this we pack tight a pledget of cotton; fill tooth with temporary filling and dismiss the patient for a few days.

When patient returns, if no inflammatory manifestations have developed, we remove all temporary work, swab out the root-canal with the tannic acid solution, and fill with pink gutta percha. In these cases all systemic conditions are taken into consideration, more especially those of tuberculous diathesis.

In cases where there is a fistulous opening, we treat more heroically and fill immediately. In all cases after filling permanently, we paint the gums at the apex of the root with the iodin and aconite mixture.

WHY WE DO IT.

We use pink gutta-percha because it is one of the best filling materials, and, when placed in contact with living tissues, if, perchance, a little should project a little beyond the apical foramen, it will cause no irritation, as we have often found such cases when extracting for artificial teeth.

The reason why we use it for the whole root-canal in so-called "dead-teeth" is, no one knows (when systemic conditions are not favorable) what moment a sleeping volcano may be awakened. It is the easiest material to remove to give vent to the explosion.

We use the mixture of iodin and aconite, or iodin alone, because they are the two most powerful absorbents we have, and if any irritation of the peridental membrane should be caused by operating, they will remove it promptly.

We use the tannic acid solution because when brought into contact with any pulp tissues left in the root canal, it forms an albuminate of tannin, a compound which is insoluble in any of the fluids of the surrounding tissues, and consequently no disintegration can take place, to cause any after trouble.

We use Marchand's peroxid of hydrogen because, when a red-hot instrument touches the absorbent cotton saturated with it, its water is turned into hot steam; at the same time a large amount of pure oxygen is rapidly liberated, and, being under pressure, permeates not only the root-canal but also the dental tubuli oxidating all septic matter.

Another reason is because if there should be a "blind" abscess the steam and oxygen forcing their way through the apical foramen not only disinfect its contents but also destroys its matrix. The same process bleaches the tooth rapidly. In cases where abscess is persistent, we curette the sac.

Our success has been all we wished in cases of our own devitalization, much being due, we believe, to our manner of applying the arsenious acid paste; with pulpless cases, our failures have been about three out of ten, considering all conditions.—*The Dental News.*

Communicated.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The fourteenth annual meeting of the National Association of Dental Faculties was held at the Hygeia Hotel, Old Point Comfort, Va., commencing Friday, July 30, 1897.

The following members of the association were represented as noted below:

Alabama Dental College, Birmingham, Ala.—T. M. Allen.

University of California, Dental Department, San Francisco, Cal.—L. L. Dunbar.

Columbian University, Dental Department, Washington, D. C.—J. Hall Lewis.

Howard University, Dental Department, Washington, D. C.—A. J. Brown.

National University, Dental Department, Washington, D. C.—J. Roland Walton.

Atlanta Dental College, Atlanta, Ga.—William Crenshaw.

Dental Department of Southern Medical College, Atlanta, Ga.—S. W. Foster.

Chicago College of Dental Surgery, Chicago, Ill.—T. W. Brophy, Louis Ottofy.

Northwestern University Dental School, Chicago, Ill.—Theo. Menges.

State University of Iowa, Dental Department, Iowa City, Iowa.—W. S. Hosford.

Louisville College of Dentistry, Louisville, Ky.—H. B. Tileston.

Baltimore College of Dental Surgery, Baltimore, Md.—M. W. Foster.

University of Maryland, Dental Department, Baltimore Md.—F. J. S. Gorgas.

Boston Dental College, Boston, Mass.—J. A. Follett.

Harvard University, Dental Department—Thomas Fillebrown.

Dental College of the University of Michigan, Ann Arbor, Mich.—J. Taft.

University of Minnesota, Dental Department, Minneapolis, Minn.—W. P. Dickinson.

Kansas City Dental College, Kansas City, Mo.—J. D. Patterson.

Western Dental College, Kansas City, Mo.—D. J. McMillen.

Marion-Sims College of Medicine, Dental Department, St. Louis, Mo.—J. H. Kennerly.

Missouri Dental College, St. Louis, Mo.—A. H. Fuller.

University of Buffalo, Dental Department, Buffalo, N. Y.—W. C. Barrett.

New York College of Dentistry, New York City—F. D. Weisse, J. Bond Littig.

Cincinnati College of Dental Surgery, Cincinnati, Ohio—G. S. Junkerman.

Ohio College of Dental Surgery, Cincinnati, Ohio—H. A. Smith.

Western Reserve University, Dental Department, Cleveland, Ohio—George H. Wilson.

Pennsylvania College of Dental Surgery, Philadelphia, Pa.—C. N. Peirce.

Philadelphia Dental College, Philadelphia, Pa.—S. H. Guilford, Leo Greenbaum.

University of Pennsylvania, Dental Department, Philadelphia, Pa.—James Trueman.

Tennessee Medical College, Dental Department, Knoxville, Tenn.—R. N. Kesterson.

Central Tennessee College, Meharry Medical Department, School of Dentistry, Nashville, Tenn.—G. W. Hubbard.

University of Tennessee, Dental Department, Nashville, Tenn.—J. P. Gray, L. G. Noel.

Vanderbilt University, Dental Department, Nashville, Tenn.—H. W. Morgan.

University College of Medicine, Dental Department, Richmond, Va.—L. M. Cowardin.

Royal College of Dental Surgeons, Toronto, Canada—W. E. Willmott.

The following schools were elected to membership:

Milwaukee Medical College, Dental Department, Milwaukee, Wis., represented by Reinhold E. Maercklein.

Tacoma Dental College, Tacoma, Wash., the constitution being signed by proxy by Dr. Kennerly.

New York Dental School, New York City, represented by John I. Hart.

Ohio Medical University, Dental Department, Columbus, Ohio, represented by J. F. Baldwin.

Baltimore Medical College, Dental Department, Baltimore, Md., represented by J. W. Smith and William A. Montell.

The application for membership of the University of Omaha, Dental Department, was laid over till next year at the request of its officers.

Applications for membership were reported by the Executive Committee from the Pittsburg Dental College, Pittsburg, Pa.; Dental Department of the College of Physicians and Surgeons, San Francisco, Cal.; Colorado School of Dentistry, Denver, Col.

The following report laid over from last year was adopted:

"Your committee on choosing a color respectfully report that they have decided to recommend the standard lilac as the distinctive dental color, and they recommend the adoption of the academic costume according to the requirements observed by the intercollegiate system."

The resolutions laid over from last year, making the annual college term seven full months, and recommending that the annual meetings be held in connection with the National School of Dental Technics, and at a time of the year when the colleges are in session, were negatived.

A committee, consisting of Drs. Henry W. Morgan, M. W. Foster, Theo. Menges, C. N. Peirce, and H. A. Smith, was appointed to meet a similar committee from the National Association of Dental Examiners, for the purpose of harmonizing the differences of opinion between the two associations. This committee reported rules which had been agreed upon by the two committees.

The report was discussed at length and again referred to the committee, which later reported, through the Executive Committee, a resolution, which was adopted, providing for the codifying and arranging of the existing rules of the association, and the preparation of such additional rules as may be deemed advantageous to both organizations in advancing the standard of dental education in the United States. On motion, the committee which had had the matter in charge in the conference was continued for this purpose.

A communication from the Dental Department of the State University of Iowa was received, asking consent of the association to its conferring the honorary degree on Dr. F. P. Weber, of Cherokee, Iowa. The request was declined on the ground that it is contrary to the practice of the association.

A similar communication from the University College of Medicine, Dental Department, Richmond, Va., asking the privlege of conferring the *ad eundem* degree on Dr. Thomas G. Cowardin, of London, Eng., was refused upon the same grounds.

The rule regarding preliminary qualifications adopted in 1896 was declared to have been adopted in an unconstitutional manner, and was therefore rescinded. The following was adopted in its place, and by unanimous conconsent was ordered to go into effect at once:

Resolved, That the minimum preliminary education requirement of a college of this association shall be a certificate of entrance to the first year of a high school or—in states that have no high school—of graduation from a grammar school, or its equivalent, to be determined by an examination.

Resolved, That nothing in the above shall be construed to interfere with colleges of this association that are able to maintain a higher standard of preliminary education.

A communication was read from Dr. W. Mitchell, president of the American Dental Club of London, requesting the appointment of a Committee to co-operate with a similar committee in Europe for the purpose of securing just recognition of the diplomas issued by the colleges belonging to the association. The communication was favorably considered, and the president appointed as the committee Drs. W. C. Barrett, D. J. McMillen, S. H. Guilford, A. H. Fuller, and Faneuil D. Weisse.

The Ad Interim Committee reported that one new question decided by them during the year was that a student who was in arrears for fees could not be accepted by another college if objection was made by the college to which he was indebted. This ruling was sustained by vote of the association.

The committee also recommended that steps be taken to secure definite knowledge as to the curricula and requirements of foreign colleges, so that the members of the association should be able to decide upon the standing of students coming from them. Referred to the committee appointed to consider the matter of Dr. Mitchell's letter.

A paper prepared by Dr. W. C. Barrett, Buffalo, N. Y., at the request of the Executive Committee and entitled "The Study of Anatomy," was read by its author.

The paper was, on motion, directed to be incorporated in the official report and copies sent to the journals for publication.

A committee, consisting of Drs. S. H. Guilford, Theo. Menges, and M. W. Foster, was appointed to select persons to prepare papers on subjects connected with the work of the association, to be read before the next meeting.

Dr. Barrett offered the following which was adopted:

Resolved, That the final vote upon the admission of a college to this association shall not hereafter be taken unless a duly certified and qualified delegate is in attendance.

The following resolution, offered by Dr. L. L. Dunbar, was adopted.

Resolved, That in order to maintain a reputable standing in this association no college under its jurisdiction shall permit any member of its faculty or teaching staff, board of trustees, or stockholders to serve in a judicial capacity as a member of a state board of examiners.

Dr. Taft offered the following, which was adopted:

Resolved, That a committee of three on curriculum be appointed, whose duty it shall be to compare the schemes of study of the various dental colleges, with the view of harmonizing these schemes and making them as nearly alike as practicable, to report next year.

The Committee on Text Books recommended the following:

Essig's "American Text-Book of Prosthetic Dentistry."

Hodgen's "Dental Metallurgy."

Schafer's "Essentials of Histology," fourth edition.

Abbott's "Principles of Bacteriology," third edition.

Gray's "Anatomy," last edition.

Luff's "Manual of Chemistry."

Burchard's "Compend of Dental Pathology and Therapeutics."

The report was adopted, and the committee was instructed to examine Kirk's "American Text-Book of Operative Dentistry," and Marshall's "Injuries and Surgical Diseases of the Face, Mouth and Jaws," and forward their views at the earliest possible moment to the secretary, in order that they may be incorporated in the printed Transactions.

A committee, consisting of Drs. M. W. Foster, William Crenshaw, and L. G. Noel, reported appreciative resolutions on the death of Drs. Frank Abbott and Francis Peabody, late members, who have died since the last meeting was held. The resolutions were adopted.

The following lie over for final action till next year:

Offered by Dr. H. W. Morgan, seconded by Dr. H. B. Tileston:

Resolved, That on and after the session of 1899-1900, the regular sessions of each college belonging to this association shall be extended to four years.

Dr. J. Taft moved to amend the constitution to require applications for membership to be sent to the secretary of the Executive Committee instead of to the Secretary of the association.

Offered by Dr. T. Fllebrown :

Resolved, That no College connected with this association shall confer any degree as honorary which is usually granted in due course of study and examination. All former rules on the subject are hereby repealed.

Offered by Dr. Barrett :

Resolved, That after the regular session of 1898-9 the annual college term for the members of the association shall be seven full months.

Dr. Crenshaw moved to strike out Rule 3 and adopt the following instead :

Resolved, That the time in which students can enter schools of this association shall be the first ten days of the session of the school, dating from the time announced in its catalogue.

The following were elected officers for the ensuing year : T. W. Brophy, Chicago, president; D. J. McMillen, Kansas City, Mo., vice-president; J. H. Kennerly, St. Louis, Mo., secretary; H W. Morgan, Nashville, Tenn., treasurer. J. Taft, Cincinnati; Thomas Fillebrown, Boston; Mass. ; B. Holly Smith, Baltimore, Md., Executive Committee. James Truman, Philadelphia; F. J. S. Gorgas, Baltimore; J. Hall Lewis, Washington, D. C., Ad Interim Committee.

The newly elected president, on being installed, announced the following appointments : J. A. Follett, Boston, Mass. ; H. A. Smith, Cincinnati, Ohio ; L. L. Dunbar, San Francisco, Cal. ; J. D. Patterson, Kansas City, Mo. ; W. T. McLean, Cincinnati, Ohio, Committee on Schools. S. H. Guilford, Philadelphia, Pa. ; William Crenshaw, Atlanta, Ga. ; W. C. Barrett, Buffalo, N. Y. ; W. P. Dickinson, Minneapolis, Minn. ; Faneuil D. Weisse, New York

City, Committee on Text-Books. J. Taft, Cincinnati, Ohio; Edward C. Kirk, Philadelphia, Pa.; A. H. Fuller, St. Louis, Mo., Committee to select subjects and essayists for next meeting.

Adjourned to meet at the call of the Executive Committee.

Courtesy of F. L. Hise, of *Dental Cosmos.*

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

EDITOR AMERICAN JOURNAL OF DENTAL SCIENCE:

At the annual session of the National Association of Dental Examiners, held at Old Point Comfort, Va., July 30, to August 2, 1897, 22 states present, the following officers were elected for the new year:

Pres. C. G. Edwards, D. D. S., Louisville, Ky.; Vice-Pres. G. L. Parmele, D. M. D., Hartford, Conn.; Secy. and Treas. Charles A. Meeker, D. D. S., Newark, N. J.

The President appointed as members of the Committee on Colleges: G. Carleton Brown, D. D. S., Chairman, Elizabeth, N. J.; H. H. Johnson, D. D. S., Macon, Ga.; M. H. Chappell, D. D. S., Knightstown, Ind.; L. Ashley Faught, D. D. S., Secretary by appointment of the Committee, 1415 Walnut Street, Philadelphia, Pa.

Obituary.

DR. SAMUEL J. HAYES.

Died at his home in Pittsburg, Pa., June 10, 1897, Dr. Samuel J. Hayes.

Dr. Hayes was born on a large farm near Johnstown, Pa., June 22, 1833. When about eighteen years of age, he entered college, paying his way through a course of study principally by teaching. Subsequently, he finished his training with a theological course and served in the pastorate for several years, being considered successful in his work both in the denomination of United Brethren and in the Baptist. In consequence of a severe bronchial affection, he was compelled to turn from his chosen profession and took up the study of dentistry, which he followed during the remainder of life, about thirty years. The defects of anesthetic agents in general and the crude condition of the science itself, early attracted his notice and he thereafter devoted his professional life to the development of this art. In his numerous writings and lectures before schools and associations, both medical and dental, he advocated and established the bedrock principles of the science, and is considered an eminent authority on the subject, his definitions for anesthesia and asphyxia being so clear and forcible that they are accepted as standard. By his researches and his invention known as "The Hayes Process of Anæsthesia," a means has been given the professional world, of producing a true anesthesia free from peril to operator or patient; this Process is now widely known and used in the United States and, to some extent, in foreigh countries.

Dr. Hayes was editor and proprietor of "The Dental and Surgical Microcosm," a journal depoted to the interests of the dental profession and fearlessly advocating the principles of the art and science of anæsthesia, as they had been opened up and established by him; at the time of his death, he had in process of preparation a book on the subject, which failing health compelled him to defer and which is not yet completed.

Monthly Summary.

ANTI-EXTRACTION.—Yearly there are extracted by the bushel teeth and roots, firmly set in the jaws, susceptible of repair and capable of performing a duty and service ten times greater than that of the best artificial substitutes. A patient with the toothache cannot take a calm, sensible view of the situation, of the irreparable injury not only through the loss of that member, but by the change of position the others will take and the unavoidable loss of the use of its opposing fellow. Out of one hundred teeth extracted, ninety-nine should not be extracted, but should be carefully and painlessly cleaned from soft decay at the margins (not over the pulp), and filled with some non-conducting cement and kept filled, imperfectly though it may be.

There are many persons, mostly ladies, who wear jewels and pearls and expensive clothing to beautify their exterior, whilst they intrust their pearls of inestimable value to the hands of the most inexperienced cheap dentists, and get his cheapest wares at his cheapest price, then go abroad and boast of the amount ecomomized in their dental bills, when one glance at their faces and one zephyr from their mouths are most convincing that their dental services were most dearly bought at the expense of their beauty and health. The worthy cheap dentist has a fruitful field, and can do an immense good, if he would confind himself to legitimate cheap dentistry without mentioning an arbitrary fee for gold work, not equal in many cases, to half of what the material used would cost.

The patient, young or old, should be told how to brush and pick and rinse his teeth, and this fact impressed on him, that teeth decay only from the outside. and for want of proper care and cleanliness. Some dentists make their living out of their patients' neglect and ignorance of the correct laws of hygiene, just as some physicians do. With our advanced knowledge of the worth of good natural teeth, and the present improved instruments and facilities for treating sensitive cavities in all positions of the teeth in a comparatively painless anner, and the numerous materials for filling such cavities, each good in its place, there is no truth in the saying that any tooth or root can not be filled. All turnkeys, forceps, and extracting screws as constructed to remove firm teeth or roots are barbarous relics of the Inquisition. For years I have extracted teeth or roots only when they were so loose they could be removed with the thumb and finger, and most heartily wish every other member of the profession would adopt that rule. They would be gratified at the conservation and restoration Nature can accomplish. There should be no artificial dentures made by the future dentist. The artificial leg- and arm-maker could increase his business with just as much justice by recommending the amputation of all rheumatic and neuralgic limbs by the aid of gas, and starting out his victims with his substitutes, which bear the same relation to the natural limbs that the best dental substitutes bear to the natural teeth.—Dr. Wm. N. Morrison, in *Western Journal.*

LIFE AND DEATH IN THE EMOTIONS.--Whatever can flush a face or pale it; whatever can bathe the body in hot perspiration or chill it with dampness; whatever can nerve one with strength or prostrate with weakness; whatever can cause rupture of blood-vessels by pressure, or faintness from weakening circulation, must certainly have wonderful power and influence on the standard of physical condition which we call health. Instances are on record where a mother, after being very angry, has nursed her child, and it immediately went into convulsions and died, so great had been the effort of her emotions on her milk. It is not uncommon for authors to suffer with extremely cold feet while at literary work. Many speakers (as well as soldiers) are troubled with diarrhea, or with over activity of the kidneys, immediately preceding a public effort. Indeed, the variety of manifestations of this principle is almost as great as is the number of people engaged in pursuits in which the emotional nature is taxed or the emotions play an important part.

I was once an invalid and expected to die. My physicians said. "We can do nothing to help you because you know your condition so well that we can inspire no hope in you. When we sound your lungs you hear the dull thud or the light resonance and know what it means as well as we," and there never was an improvement till hope was inspired, and I am confident never could have been.

I have patients in my care to-day whose mournful state of mind over their condition is more difficult to overcome than their disease, and more prostrating in its effects on them.—C. A. Church, M. D., in *Health*.

IMPROVED PORCELAIN BRIDGE.—The points in this bridge are, you are able to have 22k. gold caps on the bridge, and having a bar through the porcelain to strengthen it, its brightness and cleanliness makes it a satisfactory piece of work in the mouth. The caps are first made and a piece of platinum swaged to fit on the gum and extend up on the mesial and distal surfaces of the teeth that are capped. Then a cross of platinum or pure gold is soldered about the center of the swaged piece and a platinum rod to brace it up, and it gives you something to solder the teeth to. After this, if a long piece, standards are soldered on and the body is put on. I recommend Close's body, as Downey's, compared to Close's, is like mud compared to concrete. I consider the bridge the strongest that can be made. Then you put on the gum; you can build on the inside and slope it up to where the gum commences. After this you put caps in the mouth and put porcelain piece in position, take out, invest and solder. You make a very strong and perfect joint, and, to my idea of bridge-work, it is perfection itself.—*Stom. Gazette.*

THE MOST barbarous method of dentistry in the world is that practised by the Kaffirs. The Kaffir dentist places his patient on the ground, and four men hold him down. Then the operator takes a piece of sharpened ivory, steel or wood, and hacks away on the gums until the tooth is extracted.—*Dominion Dental Journal.*

TUBERCULOSIS OF THE ALVEOLAR PROCESS.—Carl Zandy ("Arch. f. klin. Chir." LII., No. 1, p. 178).—While this is considered to be a rare condition the author was able to collect thirty-seven cases from the literature of the last twenty five years. He also gives the history of a patient observed at the clinic of Bonn. The teeth are of the greatest importance in the etiology of this condition. Carious teeth are the seat of entrance for tubercle bacilli. Wounds of the alveolar process, especially those caused by extraction, are of grave importance. Whether the bacilli come from a phthisical lung or from the outer world, they need no better soil for development than the alveolar cavity left after extraction, There is no seat of predilection in this disease, and any part of the alveolar process may be affected. As a rule, other parts of the buccal mucosa are involved at the same time. It is very likely that the pulmonary lesion which is found at the autopsy is secondary to the alveolar disease. Syphilis is no bar to a tubercular involvement of the alveolar process. The disease seems to develop between the ages of fifteen and fifty. Males are more frequently affected than the females. Usually the gum will swell and become loose, soft and bleed very rapidly. This will soon be followed by ulceration, with pale, sluggish granulations. Following this the teeth will get loose and fall out and the bone may become necrotic. Pain is not very marked, but salivation is very profuse and the mouth has a very foul odor. A differential diagnosis is to be made from syphilis and carcinoma. The diagnosis will be facilitated by the presence of tuberculosis of the larynx or lungs. The best therapeutic measure is through curetting and removal of all suspicious tissues. This can be followed by applications of equal parts of lactic acid and distilled water to all recurring foci.—*Amer. Med. Surg. Bull.*, August 15th, 1896.

AN INTERESTING CASE OF MEMBRANOUS STOMATITIS. A case of rather exceptional interest was recorded by Mr. Stanley Colyer, at a recent meeting of the students' Society of the Dental Hospital of London. The patient, a man aged about twenty, had been sent to the Western Fever Hospital, suffering from supposed diphtheria. The membrans was not symmetrical, but was confined entirely to the left side of the mouth, covering the hinder portion of the left border of the tongue, the gum around the lower molar teeth, and the tonsil. The case being unusual, careful bacteriological examinations were made, but in no instance was the Klebs-Lœffler bacillus found. After the patient had been in hospital one or two days it was discovered that he had an abscess in connection with one of his lower molars. The offending tooth was removed, and from that time the membrane began to clear up, and soon disappeared.—*Journal of Brit. Dent. Assoc.*

I HAVE no sympathy for the young man who says he cannot contribute a short paper, or talk to his local society meeting, because he has nothing of real interest to say. If we only opened our mouths when we had something of great value to put forth, what a very quiet world this would be—even during a presidential campaign. As a bit of mental discipline it would be an excellent idea for the young dentists to form a habit of writing up (in their moments of enforced leisure) any cases of interest that may occur in their practice, not simply with the chastened hieroglyphics of the case book, but with an eye towards a slight literary style and finish and scientific edge strength; not necessarily for publication either, but as an evidence of good faith and interest in their profession, outside the bread-and-butter aspect.—Charles McManus, D. D. S., in "International Dental Journal."

ADHÆSOL is a substitute for collodion, over which it has the advantage of being a better antiseptic. This preparation is a clear amber-colored liquid, with a pleasant odor, and is neither toxic nor caustic. It dries in a few seconds on the skin, and is an adherent covering to the mucous membrane. It is prepared as follows: Macerate, Resina Kopae, 350 gm.; Benzoe and Balsam Tulû aa, 30 gm., with a mixture of Ether, 1,000 gm.; Al Thymi, 20 gm. for two days, filter and add a-nopthol, 3 gm.

INCISOR OR CUSPID CROWN.—The only way I can make an open-face crown for a cuspid or incisor, that will fit perfectly, is as follows: Take, for instance a central incisor on the right side; the left lateral and cuspid are out, and you want to make an open face crown for the central. First, get your strip of gold a little wider than the tooth is long, and a little longer than will go around the tooth. Bring it around the tooth and with a pair of flat pliers pinch and draw tightly around it until it fits perfectly. Hold it tight and with another pair of pliers, of the same kind, draw or pinch the gold down at the point of the tooth. Stick a pin through the edges, remove, and solder together. Trim edges and cut out the face in the usual way. You will find that it fits perfectly and will not take five minutes to make the crown in this way. If the tooth is broken off at one corner build it up with cement.—*Ohio Dental Journal.*

TEETH IN RELATION TO THE EAR, NOSE AND THROAT. Gambati called attention to the importance of not neglecting the teeth in diseases general, and especially in those of the ear, nose and throat. Disease may affect the development and formation of the teeth. The reverse is also true, a carious tooth or alveolar abscess may develop symptoms that are thought to depend, by the patient, on trouble in the ear, nose and throat. The ear especially is frequently the seat of reflex disturbance that originate from the teeth, although the nose and throat are also sometimes affected in this manner.—*Laryngoscope*, March, 1897.

HEARING RESTORED AFTER TWENTY-FIVE YEARS.—Bennet mentions a case in his practice where a lady, 50 years of age, whe had been deaf for twenty-five years, had her hearing restored immediately after the extraction of a number of roots. Among these were the roots of the upper wisdom teeth, which were badly exostosed, and when extracted she felt as if relieved of a pressure, which she had felt for a number of years.—*Dominion Dental Journal.*

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ARTICLE I.

ILLINOIS STATE DENTAL SOCIETY, 1897.

DISCUSSION ON DR. WASSALL'S PAPER ON "PYORRHEA ALVEOLARIS."

Dr. A. W. Harlan, Chicago: This paper of Dr. Wassall's deals with a subject that we all have more or less acquaintance with, and I do not expect in opening the discussion to deal with all of the divisions of the subject that he has made. In alluding to the definition, Dr. Wassall states that Wedl had previously described what we know as pyorrhea alveolaris. He also named it pyorrhea alveolaris. This book was published about thirty years ago and was translated into English as early as 1872, so that the name pyorrhea alveolaris had become familiar to a good many English-speaking peeple through reading that translation. Previous to its appearance in English, Dr. J. H. P. Brown, of Augusta, Georgia, had described this disease without being acquainted with Wedl's classification or denomination, and it was pretty well known from that description, although no name was given to it. As early as 1877 the late Dr. Rehwinkel, of Chillicothe, Ohio, read a paper before the American Dental Association which was devoted to a consideration of what was termed pyorrhea alveolaris, and later, as Dr. Wassall has said, Dr. Black described one phase of it, one division of it, as phagedenic pericementitis. I think probably even now to a mixed audience the distinction between what is known as pyorrhea alveolaris and phagedenic pericementitis is not clearly understood. I should say, from a somewhat close observation of a large number of cases, that we find in connection with loosening of teeth not only a detachment of the peridental membrane and wasting of the alveolar process, but another condition present, the development of pockets. In the first case, we have the loosening of the teeth, the wasting of the alveolar process, and a gradual evulsion of the teeth without any deposit whatever, no deposit being found at any time, the teeth coming out clean and divested of the peridental membrane. In the other phase we find that there are pockets, and concomitant with them, or shortly following the development of these pockets, we have deposits that have been named serumal or sanguinary deposits, (Ingersoll). Those deposits are granular or smooth, in sheets or islands, and they may or may not cover the whole side of the root of the tooth as far as the pocket extends along its side. In most of these cases we also have the breaking down of the alveolar process, not symmetrical, but projecting, so that the alveolar process may surround the lingual surface of the tooth and the root, and the alveolar process will be broken down on the labial surface. Now, we have a totally dissimilar condition in that case from the one in which there is a uniform wasting of the socket, with loosening of the tooth and destruction of the peridental membrane.

In all of the cases of that kind that I have ever seen or examined or observed, I have never yet found one where there was a deposit on the side of the root or near the pockets or covering the apex of the root but what there was some method of reaching it from the gingival margin. I have heard speakers say in conventions before now that these nodules or islands have been found without there being any detachment of the gum at the gingival margin. I have never seen one of these cases. I have seen them, however, when the pulp of the tooth had previously been destroyed, and the root of the tooth had been imperfectly filled, and then I have seen these deposits after the teeth were extracted, but there was no pericemental detachment. If such a condition of things exists whereby a deposit or nodule of calcific matter could be laid on the side of the cementum without any opening leading from the gingival margin, why do we only find such things on one tooth ? Why would we not find it on two or three ? I can not answer that question. I do not know. It seems to me that in all of these cases the presence of micro-organisms is absolutely necessary, and that we are concerned in the first place with the loosening of teeth and the symmetrical destruction of the alveolar processes with an anærobic micro-organism described by Pasteur as early as 1870, I think; and in the formation of deposits on the roots of teeth, in pockets or pouches, that we are concerned with the anærobic and the facultative micro-organisms, the anærobic micro-organisms being able to subsist and destroy tissues without the absolute presence of oxygen, and the facultative organism working as a pathogenic micro-organism that subsists in the presence of or being deprived of oxygen. These minute deposits and granules and sheets, I should say, are probably, without knowing anything more definite, the result of the destruction of the hard tissues surrounding the root and the deposition at that point, because the roots which contain the products of these organisms are not exposed to any of the fluids sufficient to wash them away, and so in these deposits we find there remain the old and broken-down facultative and anærobic organisms. This is very clearly shown by some of the work of McFarland in his book on "Pathogenic

Bacteria," and it is further shown in the work of Park in the "American Text book of Surgery," on the "Deposits on Long and Flat Bones," but always where there is an open sinus or an opening to the external world. By analogy, if the same process causing the destruction of a portion of the periosteum in bones and the destruction of a portion of the bone itself, or a destruction of the nutritive material which is carried to the point which is loaded with inorganic materials, probably we have reason to believe that that may be the method of the deposition of these deposits independently of the uric acid, rheumatic, gouty, or other diathesis.

Dr. Wassall in his paper said that he did not quite wholly subscribe to the theory of Pierce and Kirk with reference to all of these cases being attributed to the uric acid diathesis. It has been my good fortune to have had under my care a few people who were strict vegetarians, and it is not generally believed that vegetarians are subjects of the uric acid diathesis, but they had loosening of the teeth and so-called or actual pyorrhea alveolaris. It does not seem to me that the theory of the universal production of nodular deposits on the roots of teeth is wholly accounted for by the theory advanced by Pierre and Kirk, as the whole human race can hardly be said to possess a universally rheumatic or uric acid diathesis. I know we are sailing in deep water when we are talking about the deposition of these islands and granules and nodules on the roots of teeth, but we have them present, and if we can prevent injury to the gingival margin, the gingival attachment to the necks of teeth might perhaps solve that question. But we have an actual loosening of the teeth, and we have to meet that condition of things.

The method of administering medicines internally for for the cure of what we term pyorrhea alveolaris without surgical treatment or removal of the deposits is an absolute failure. The deposits must be removed. The administration of various forms of lithia and lithiates and gaseous waters for the relief of the loosening of teeth, where there are no deposits, does not result in a cure. It has been absolutely necessary to fix these teeth with splints or bands or some method of holding them together by running bars across the ends or wires, or something of that sort; and the application of local remedial agents.

In the consideration of the causes of pyorrhea alveolaris, in a paper read by Dr. Rhein, of New York, a year and a half ago, he attributes everything practically to malnutrition; but you and I know, and nearly everybody knows, that some of the most robust and active and outdoor people have loosening of the teeth. They may have nasal obstructions; they may have diseases of the mucous membrane itself which will cause them to breath through the mouth. Now, in those cases we have true pyorrhea alveolaris—that is to say, so distinguished from phagedenic pericementitis, with the destruction of the alveolar process, of the peridental membrane, loosening of the teeth, distortion of the teeth, etc.; without any uric acid diathesis or complications. I should say, then, pyorrhea alveolaris with a half-dozen other names, such as infectious alveolitis (Witzel), and loculosis alveolaris (Farrar), symptomatic alveolar arthritis (Magitot and Malassez), subscribed to by Gallipe, of Paris, who has paid a great deal of attention to this subject, with all of these various aspects, we have a great variety of complications, all of which need more or less different terms, and so far as I am concerned, I have never been able to follow a cast-iron rule in the treatment of these cases.

There are two points in connection with pyorrhea alveolaris that I would like to emphasize, as spoken of in Dr. Wassall's paper. They are these: One is this, that the teeth must be fixed in their sockets, held as nearly firm as it is possible to hold them, permitting of a minimum movement. The other point is that the deposits on the roots of teeth in pockets and pouches must be removed. When that is done, cleanliness, the frequent use of various agents in the mouth to destroy any infection, and the sufficiently frequent use of systematic medication to the pouches or pockets is all we can do to effect a cure.

With reference to recurrence. It seems to me there are a number of cases that are cured, and they do not recur. This depends entirely on the local cleanliness and care, with a reasonable amount of inspection by the dentist.

Dr. R. N. Lawrence, Lincoln: I have no criticisms whatever to make on Dr. Wassall's paper. He has given us a clear, concise resume of the outlines of this disease. So far as my experience with the disease is concerned I have had many successes and some failures, but I feel very much encouraged. We know very little about the etiology of this trouble, and there is an extensive field that lies before the young men of our profession along this line.

So far as bacterial conditions are concerned, bacterial pathology is a subject which should stimulate our young men to investigate and to make some experiments, in order that we may come to a conclusion as to the cause of the different varieties of pyorrhea alveolaris. It is evident to my mind that there are varieties of the disease which produce the same results, a destruction of both hard and soft tissues.

Coming to the treatment, so far as my experience goes, it is a surgical disease; and it requires a knowledge of the parts and the skillful use of proper instruments to remove the deposits that may be in the pockets or about the teeth; in other words, we should make a clean surgical wound of the pocket and surroundings, being thoroughly aseptic in our treatment, and invite Nature to bring about the formation of new tissue. Whatever that tissue may be I am not prepared to say. But I know from results which I have seen that such tissue is formed, the teeth grow firm, the surrounding parts become healthy, and the patient is made comfortable. Perfect rest, cleanliness and stimulation of the parts must be maintained, or there will be more or less trouble. The case will require careful looking after.

As to the uric acid diathesis, I have read with a great deal of interest what some of our Eastern practitioners have had to say in reference to this matter; and while Dr. Black says that there may be some uric acid deposits in these pockets, I do not think such deposits are the sole cause of pyorrhea alveolaris. I had one case which, after treatment, I dismissed about a year ago. It was one of the worst cases of rheumatic gout that I have ever seen, where the articulation of the thumb- and finger-joints was almost destroyed. Under the use of lithia waters the patient has been made comparatively comfortable; having lost no teeth, and having no decayed teeth. This was a case of pyorrhea alveolaris which extended over the entire mouth, but which involved more particularly the molars. On examination of the case the firsi time, I found the gums everted and thickened. I could pass a probe almost to the apex of the roots of the molar teeth. I saw the patient the other day, and outside of some ordinary calcific deposits on the lower front teeth, I found no pyorrhea. I took a fine probe, and passing it around the necks of the teeth I found the pockets closed. To-day there exists simply a dimple in the gums where the pockets were.

With regard to systemic conditions in these cases, I invariably consult the family physician; and I find in females with female troubles, especially where there is leucorrhea, that unless this condition is controlled we shall fail to cure the pyorrhea alveolaris. The systemic causes must be overcome, and the dentist must act in conjunction with the family physician. Take a large percentage of the cases where there are several pockets, and by thorough instrumentation and the use of lactic acid to produce adhesive stimulation, being careful to maintain thorough asepsis in your operations from start to finish, you can effect a cure in most of them. One of the essential points in the treatment of pyorrhea alveoloris, as in any surgical operation, is to be absolutely clean. Your instruments should be kept in a solution of sulpho-naphthol during the operation, and thorough cleanliness should be maintained by washes after treatment. Take many of the cases that come to us from the country—people who do not care as well for their mouths as those who live in cities. It is my invariable custom to resort to a system of massage; that is, where the gums are swollen and tumefied. After getting through with the surgical part of my work, I pinch these gums as hard as I can to relieve engorgement before making the final applications. Having done this, the pockets can be sealed up by the use of lactic acid. If, on re-examination of cases treated, I find a pocket not closed, I conclude that there must be some remaining deposits and I proceed to remove them with instruments, or a 5 per cent. solution of trichloracetic acid, as suggested by Dr. Harlan, which will act as a solvent in such cases. Having removed the deposits and all dead tissue, soft or hard, close up the cavities and give Nature a chance to do the rest of the work.

I followed Dr. Harlan's advice with regard to treatment of recession of the gums with iodide of zinc, and it has surprised me what success I have had. By making vertical and horizontal incisions and cauterizing the gum with iodide of zinc, the "V-space" can be reduced one-half at least.

I do not rely upon lactic acid to remove deposits; but upon Dr. Younger's improved forms of instruments, to be used by me in my clinic before this society in demonstration of his successful treatment of pyorrhea alveolaris.

Dr. Thomas L. Gilmer, Chicago: I have been very much interested in Dr. Wassall's paper. He has covered practically all the points regarding our knowledge of this disease. I wish to relate in this connection an incident: About twenty-six years ago, Dr. Chase, of St. Louis, was the professor of operative dentistry at the Missouri Dental

College, where I was attending lectures. At that time this disease was not understood or discussed as scientifically and thoroughly as it now is. It was more frequently spoken of as tumefied gums. Dr. Chase was a homœopath. He told the students that if we would use very small doses of calomel, or as he called it, mercurius vivus, we would get beneficial results in the treatment of this disease. I afterward used it to some extent and did seem to get benefit from it, but finally discarded it. About a year ago one of my patients who had pyorrhea alveolaris, disappeared. Seemingly I could only alleviate the condition in her case by the ordinary treatment. She is a sort of semi-invalid, and is frequently in the hands of one of the most eminent physicians in Chicago. Two or three months ago she returned. I supposed, unless she had had treatment by some one else, that her teeth would be loose or lost, but was surprised to see the condition of her gums when she assured me that she had seen no other dentist. The diseased condition had largely disappeared. There were some serumal deposits; still the gums looked healthy and were hugging up around the teeth closely. I asked her what she had been doing for her teeth, and she replied, nothing, but that her doctor had treated her for some other ailment on very minute doses of calomel. This she had taken for several months. Of course, I do not know that the calomel had anything to do with the cure of her gums. I saw the condition her teeth were in then and the condition they are in now.

Dr. Cushing: Was this homœopathic calomel or ordinary calomel?

Dr. Gilmer: I believe she was receiving one-twentieth of a grain of the calomel treatment daily. Of course physicians recognize now that three pellets of the twentieth of a grain of calomel is ample to stimulate the liver.

Since so much has been said about the rheumatic diathesis being the cause of pyorrhea alveolaris, I have watched my patients who have had this disease very closely, and it is the rarest thing for them to acknowledge ever having had rheumatism. On the other hand, I have found that rheumatic patients generally have a good deal of erosion of the teeth, particularly of the occlusal surfaces.

I think Dr. Lawrence is correct in his statement that it requires surgical treatment in order to effect a cure in pyorrhea alveolaris. If we immobilize the loose teeth and remove all the deposits, and all the carious portion of the alveolar border, we are very likely, without any other treatment, excepting perhaps the use of a detergent, to effect a cure. I have in some instances omitted stimulants in the treatment of the disease, relying on surgical procedure and thorough irrigation, and find I get as good results as when I have used stimulants. Surgeons often, by curetting the walls of a cyst, stimulate new and healthy tissue and cause a cure. We do the same in the treatment of pyorrhea. I think small flame-shaped burs are very useful in removing deposits.

Dr. J. G. Reid, Chicago : I know very little about this subject, and wish simply to relate an incident which Dr. Gilmer has touched upon, and which makes me think that this is one of the most difficult troubles we have to contend with. We listen and think, and it sems to me it is nothing but think, think, think, and when we have gotten through thinking, the case is done with. The case I have to relate is one that has given me more trouble than any other case I ever had. It was similar to the one related by Dr. Gilmer. A man had pyorrhea alveolars; his hair was falling out; his teeth were getting loose. He was a young man, comparatively speaking, but he had lost, through my scrupulous care, two or three molars, and he became so debilitated that he had to quit business and put himself under the care of a physician—a homœopathic physician. I saw the gentleman two years later, and expected to see him with his teeth missing, but when he came into my office the teeth that were left were in a healthy condition. This was one of the most aggravated cases of pyorrhœa alveolaris that I have ever come in contact with. I asked the patient if he could relate to me the treatment he had undergone. He coulk not tell anything about it. He said he had faithfully and conscientiously followed the advice of his old homœopathic physician; that the physician kept his pockets full of small pills, which were to be taken as advised. This he had done for two years. When I saw the man's mouth at the end of this time, there was absolutely no indication of pyorrhea in any part of his mouth, and his teeth had not been touched by a dentist in the meantime.

Dr. Cushing: Did you consult the physician regarding the matter?

Dr. Reid: I consulted the physician, but he would not tell me anything about it. He told me I would have to study medicine and find out what he had. I cannot account for the cure of the pyorrhea in this case. I do not know whether it was the physician or not that brought about this result. The man was reasonably clean about his mouth and took the best care of his teeth he could. It seems to me remarkable that such a condition was brought about in this case. I have no theories to offer as to the etiology of pyorrhea alveolaris. We find this condition existing in rheumatic and gouty people, and the gouty and rheumatic people who do not have it are just as numerous as those who do have it, and personally I cannot advance any definite opinion as to the cause of this disease, and I can only say that I do not think we know very much about it at present. Some cases we can and do cure, and there are a great many cases in which we do not effect a cure. I have been tempted oftentimes to experiment a little in some apparently hopeless cases by removing, scraping and replanting them.

Dr. Griffin Munroe, Springfield: In my practice of twelve years I have met with a number of cases of pyorrhea alveolaris, but I very rarely make any promises to my patients as to what I can do for them. Dr. Wassall has suggested that patients with this disease ought to call on the dentist every three months, and I believe this is one of the keynotes to successful treatment of these cases. I have been discouraged to find that some of my patients did not come back at the end of three months for additional treatment, if necessary. I have found one case that relates especially to this trouble which I desire to recite. A gentleman, who lives in Springfield and conducts a business there, thought he had struck a cure for this trouble, so much so that he wanted me to tell it to other people, and it is along the line of homœopathy. He had traveled all the way from Montreal to California, visited dentist after dentist, and when he asked the dentists whether they could do anything for his trouble, they would shake their heads and say the disease was incurable. He found one man that was willing to treat his teeth, and another man in Bozeman, Mont., who had obtained medicine equivalent to Robinson's remedy, which we have often used for this trouble. He persuaded me to send for that remedy. I had used it quite often without any marked results. However, I secured it to please him. After some visits to different dentists, he came back to me and had me to help him a little. He then told me that he was taking a homœopathic remedy, named calcarea, internally, and that he had been taking it constantly for some time. Under the use of this remedy and the attention that he received at my office and from other dentists he happened to visit in the country, he improved considerably, and thought that calcarea renalis was such a wonderful remedy that it ought to be proclaimed to the world.

Dr. Garrett Newkirk, Chicago: There are two or three points I wish to touch upon in connection with this subject. We have heard a good deal about the etiology of this disease to-day, and we know not very much more than we did before, although the paper is an excellent one and presents the facts up to date. A good deal has been said with regard to the removal of the deposits from the roots of teeth. Very well and good, but we must not forget that after the disease has reached a certain stage and there are present large pockets, we have not only to remove deposits from the teeth, but we have to contend with carious bone, real caries of the alveolar process. Dr. Gilmer has touched upon the subject when he spoke of burs for scraping, but I wish to bring it out clearly and emphatically. It is necessary to examine the condition of the alveolar process in these cases, and find out whether or not there are any spiculæ of bone extending into the pockets, because there is often an irregular, ragged condition of these walls. We will find by using a scraper, or a spoon-shaped excavator of the large sort, or a bur, with or without the engine hand-piece, that the walls will break down easily. We should use a bur or other instrument till we feel that we have got down to the harder tissue of the alveolar process. We must get rid of the loose, ragged walls. I have had many cases where, after removing the spiculæ of bone that reached in between the the teeth, the walls being thin, a cure has been effected almost spontaneously with very little other treatment.

A few weeks ago, when I started for California, I gave final treatment in a case of this sort that had been obstinate for a year or more. By means of the bur I reached around in between the roots of the two central incisors and found the softened and easily removable pieces of bone, which I thoroughly took out. Then my assistant during my absence made two or three injections, and when I came home, the case was absolutely cured. The gums were in a perfectly healthy condition. It is just as important to examine the bone as it is to examine the tooth.

One more point: Where you have a case, for instance, involving the lower incisors and possibly the cuspids with them, and there is, perhaps, a crowded overlapping condition of the teeth, extract the worst one of the lot for drainage, then bring the others together with ligatures. You may effect a cure in this manner often when you cannot do it in any other way. If you have a lower incisor or bicuspid which is just hanging by the end of the root, I believe it is better to have it out of the way, to relieve congestion, secure drainage, give room for treatment, and save the rest of them.

Dr. F. H. McIntosh, of Bloomington: I cannot say how intensely interested I am in this subject, and perhaps my method of treatment will help some one, and so I will tell you the method I employ in the treatment of these cases in the way of medicaments. I syringe out the pockets, each of them, with a 5 per cent. solution of pyrozone, and following that I use a 10 to 15 per cent. solution of aromatic sulphuric acid. I get excellent results from this method. Most of you understand the action of aromatic sulphuric acid. It takes hold and removes dead portions of bone, and does not affect the living.

Dr. J. G. Templeton, Pittsburg: Like some of the other gentlemen who have spoken on this subject, I must confess that I know very little about it. I have been treating cases of pyorrhea alveolaris since 1867, at a time before Riggs wrote anything on the subject. At that time I could get nothing to read on the subject, except what was in Taft's "Operative Dentistry" and what was written by the older men of the profession; there was a little in Harris' works, but not very much. When Dr. Robbins, of Marysville, found out what I was doing, he laughed at me. He said he had been all through this thing, and I would have to quit too. I remember saying to him that I did not expect to quit, but that I was going to keep on trying to find something to cure this disease. I asked everybody for information and got nothing. The first I saw was Riggs' work. I did not like it. I had an experience prior to that time not to like what he wrote, when he recommended tincture of myrrh. All I did know was to remove the deposits with suitable instruments as I could get, and I have in my possession now, for removing deposits of tartar, instruments that were made fifty years ago. The man who owned them was killed at the battle of Fredericksburg. I got them from his son and I have used them up to this day. He had been practicing some twenty-five years before he entered the army. As Dr. Reid said, we do not know very much about pyorrhea alveolaris---at least, I do not, although I have been studying it all this time. I believe I have read almost everything that has been published on the subject, and have received some hints from what Dr. Harlan has written, and some points from what Dr. Pierce has written. I do not place much confidence in the uric acid theory. A few years ago, Dr. Patterson took the ground that pyorrhea was due largely to catarrh. In a person who has catarrh badly, this trouble is likely to be aggravated, just as a uric acid diathesis will aggravate it. The best thing, in my opinion, that has been written on this subject in the way of illustration and description, as has been mentioned here, can be found in the "American System of Dentistry." in the article written by Dr. G. V. Black.

In regard to the treatment of pyorrhea alveolaris : I have practically gone through the materia medica in search of remedies to cure this disease. I have tried everything that has been recommended, and I always get back to one thing. Dr. Peck will recollect that I treated some cases at the Chicago College of Dental Surgery a few years ago, and I have to say this in regard to these cases, that there is a great deal called pyorrhea that is not pyorrhea. Dr. Black makes an accurate distinction between cases when he says that certain cases are nothing more nor less than calcic inflammation.

It is an inflammation of the gums caused by the deposit of tartar around the necks of teeth producing irritation. It is different from genuine pyorrhea. Pyorrhea means a flow of pus from the sockets, from the alveolus, and when you see a genuine case of pyorrhea alveolaris, you do not see much deposit. The pus flow is dissolved, it is not oozing out, and there may be some deposits upon the roots of the teeth. It has been said by Dr Lawrence, and very properly, that we may remove all the deposits. I think that is the first thing we should do. If you use the proper instrument and have an educated touch to your finger, you will know when it comes in contact with any of these deposits. Sometimes it requires considerable force to dislodge them.

A few words more in regard to treatment and I have done. I was invited to read a paper before this society, and have prepared one on practical things in practice. At the time I did not know there was to be a paper read on this subject. I have prepared a few lines in regard to pyorrhea alveolaris, and I shall be glad to tell you something about it to-morrow when I read the paper. I will simply say that my sheet-anchor in the treatment of pyorrhea alveolaris is sulphate of copper. Dr. McIntosh referred to the use of aromatic sulphuric acid; that comes nearer to my treatment than anything that has been mentioned this afternoon. You all know that where there is necrosis of bone the sulphuric acid treatment is the most reliable, and that you have to depend upon it to arrest necrosis. I applied it heroically in many cases. I learned to use it at the Pennsylvania Hospital in Philadelphia. While there I saw many cases brought into the clinic presenting large ulcers on the limbs and different parts of the body. These ulcers were indolent and would not heal. We applied a 20 per cent solution of sulphate of copper on a cloth saturated with it, which was laid over the ulcer, and the next time we saw the patient we could see that the ulcer was beginning to heal, that granulations were taking place. At the end of a few weeks the ulcer was entirely healed. After seeing it used in the Pennsylvania Hospital for the treatment of ulcers, I thought of these spongy gums that I had been trying to cure. When I reached home, in the first case that came to my office I thought of this treatment of 20 per cent. solution of sulphate of copper. I applied it and had excellent results.

Dr. Wassall: There is very little for me to say in closing the discussion on my paper. There does not seem to have been any criticism upon it. The discussion, however, has been so instructive and interesting that I think those of us who heard it have been benefited, and I am glad I selected the subject of "Pyorrhea Alveolaris" for my paper.—*Dental Review.*

ARTICLE II.

SOME POINTS IN THE ETHER-CHLOROFORM CONTROVERSY.

BY W. M. BARTON, M. D., WASHINGTON, D. C.

Read before the Washington City Dental Society, June 15, 1897.

The subject of anesthesia has become so highly specialized that it is not at all an easy task to select a particular phase of it which might be generally interesting. Being fully aware of your indulgence, however, I have written upon a topic which interests me more than any question bearing upon the present status of anesthesia, namely, the controversy which is taking place to-day in all medical societies of the world between the adherents of ether on the one hand and those of chloroform on the other.

This subject, I take it, may be of interest to you from a practical as well as scientific point of view.

The cataphoric anesthetization of dental pulp by special solutions, as developed by Grasheintz, or infiltration of the cellular tissue of the gum along the lines mapped out by Schleich, are of interest to you as practicing dental surgeons, but the subject with which we are dealing is of greater moment to us all, as involving questions of ethics is of great importance.

It would be interesting certainly, had we time to enter into it, to discuss the question of discovery of general anesthesia by ether, for the question of priority of this discovery gave rise to one of the bitterest contests for fame ever waged in a medical arena.

Last year, 1896, being the fiftieth anniversary of the event and of its announcement to the world, very naturally the old discussion, temporarily crushed by the death of the principal combatants, were reopened. Papers by Barber and Emerson appeared in favor of Jackson, and a very calm and dispassionate argument, though brief, by Ayer, in favor of the claims of Morton. Whatever the real truth may be, the dentists and doctors of to-day may well join in congratulating themselves and in carrying the two names, with that of Long, emblazoned upon the shield of fame.

The question of discovery may well be dismissed with the following bulletin:

March 30, 1842, Crawford Long, of Georgia, used ether for surgical anesthesia. He repeated it four times between that and 1843 and then gave it up and made no public mention of it until 1849, three years after its general adoption.

In November, 1844, Horace Wells, of Boston, a dentist, making regular use of nitrous oxide for extraction, used ether instead, at the suggestion of Dr. Marcy, of Hartford, Conn. He soon abandoned it and went back to nitrous oxide.

In September, 1846, Charles T. Jackson, of Plymouth, Mass., suggested to Dr. William T. J. Morton the use of ether in place of nitrous oxide. Dr. Morton made the introduction of ether his life work.

The discovery soon crossed the Atlantic, and anesthesia by ether was taken up enthusically by Liston in England and by Malgaigne in France. The discovery produced the profoundest stir everywhere as such a revolutionary and wonderful procedure might have been supposed to do. The only objections urged against ether at this time were on moral grounds. A death occurred in England, and about the same time Sir James G. Simpson; of Scotland, introduced chloroform, and all of the enthusiasm which had before belonged to ether, and its promoters, for some unaccountable reason, went over to chloroform, which agent was used universally, and absolutely without discretion. Ether promised to be forgotten. Is it any wonder that all the enthusiastic rivalry as to who had used chloroform the greatest number of times should have been suddenly checked by a series of shocking accidents? Deaths occurred—unaccountable, sudden, unexpected, death in persons apparently sound, under short operation and early in the anesthetic state, when accidents might have been supposed least liable to occur. Physiologists and surgeons discovered simultaneously that they were handling a fanged serpent, whose venom was deadly, and who had come to them in the divine shape of Morpheus himself. Warm discussions arose between partisans everywhere, and France became divided. The Lyonnaise took up ether, the Parisians chloroform. America and England became divided in the same manner, while Germany and Belgium remained faithful to chloroform. These distinctions have remained to the present day and the discussions have remained, but the close observer can see that ether is gaining ground, and if there be anything in signs, chloroform is fast losing the enviable position of vantage which it has held for nearly a half century.

The more the question is studied the more do the partisans of ether multiply, and it looks as though the death knell of chloroform as a general anesthetic is about to be sounded.

If we could hope in the very brief limits of this paper, to treat the subject in an exhaustive manner, we would naturally adopt the classification adopted by that great therapeutist, H. C. Wood, in a paper read before the tenth International Medical Congress in 1890. He presented his essay under several points, the most important being: first, a discussion of the method by which these two drugs kill, both in man and the lower animals; that is to say, whether they destroy life through respiration or the circulation; second, a comparison of the comparative fatality, to which may be added a description of the phenomena observed upon administration of the two anesthetics. Some such order as this is a great convenience in treating this subject.

Unfortunately as regards the first proposition no gratuitous assumption can be made, as there are great difference of opinion, at least until very recently, as to the actual manner, for instance, by which chloroform produces death in ordinary cases. Two great schools have arisen upon this question arrayed in two lines, the one adhering to the cardia-paralytic theory, the other to the respiratory-paralytic.

It is certainly very important to resolve this question, for unless we do we can form no precise and logical notion of the matter at all. This very point gave birth to the great Hyderabad commission, whose work on the subject has formed the inspiration, if not the basis, for most subsequent investigations by Gashell, Shire and McWilliams in England, and by Hare, Wood and Thornton in our own country.

The number of experiments conducted under the above auspices alone has been enormous.

Through the beneficence of the Nizam of Hyderabad, India, two commissions were appointed. The first has been justly criticised because it concluded that chloroform deaths are respiratory. A second commission was appointed by Lauder Brunton and came to identical conclusions, although Brunton when he came to India to conduct the investigation believed in the cardiac failure theory.

About this time Wood and Hare published a joint paper, in which they adhered to the powerful depression effect of chloroform on the heart, and McWilliams of Glasgow did the same. The Nizam of Hyderabad, bent upon pursuing the controversy to its bitter end, commissioned one of our own great therapeutists, Hobart Amory Hare, of Philadelphia, and Gaskell and Shire, of England, to pursue studies upon the subject, with a view of effecting a reconcilation. The result has been to emphasize the depressing effect of chloroform on the circulation and respiration, but more particularly to demonstrate the important fact *depression* and *paralysis* of the *vaso motor centres in the medulla* constitute the most important feature of the baneful effect of chloroform. In other words, it is the dilitation of capillaries, as well as enfeebleness of the heart, that we have to fear in administering chloroform, death being due to vaso-motor paralysis, literally allowing the patient to bleed to death in his own capillary system. The capillary area of the body is so comparatively enormous that it is capable of containing all the blood in the body, and if the heart cavities are not supplied with blood it is a well-known fact that that muscle will cease to functionate although it be not primarily diseased. Both ether and chloroform produce a fall in blood pressure, but the latter much more so than the former. This being the case, the chloroform advocates say bandage the extremities, give atropine, which is a vaso-motor stimulant, apply abdominal compression, invert the patient, &c., all these things tending theoretically to counterbalance the evil effects of chloroform, but practically they do not confer immunity from danger, and only give a false sense of security.

All of the conclusions, then, of the Hyderabad commission can by no means be accepted, and several objections can be urged, according to Wilson, against the increased application of this conclusion. This commissiom advocated chloroform because in some 600 administrations upon lower animals it was not found possible to directly paralyse the heart by ordinary doses. But there may, and probably does, exist a considerable difference between the effects of chloroform upon man and animals; the habits of life, the taking of stimulants and narcotics, certainly alter the resistance of the central nervous system. There are important differences in vital capacity between man and animals, the latter breathing less of the vapor than man.

It is a fact that when there is some obstruction to breathing in cases submitted to chloroform anesthesia, deaths are extremely rare. Clover, some time ago, called attention to the comparative immunity of phthisical patients, whose respiratory capacity is of course diminished. This same comparative immunity seems to exist in patients anesthetized on the side and in cases of ovarian tumors, under all of which circumstances less vapor enters the lungs. In this connection it is important to note, as Wilson has done, that the majority of deaths occur in robust persons who take chloroform eagerly for reduction of dislocations, dental extractions, and particularly when the anesthetic is administered in the upright position. For ordinary cases the several conditions giving a fatal result from heart failure are combined only about once in every two or three thousand cases, but because the commission did not obtain them in a few hundred experiments they unreasonably conclude that the danger does not exist.

All agree, then, that chloroform diminishes blood pressure, and the only question would seem to be whether it does so by a primary effect upon the heart muscle or by one upon the vaso-motor center. We have seen that recent investigations point to the latter theory.

Most of the anesthetists whom I have encountered who prefer chloroform to ether base their preference upon the fact that it is more easily handled; they say that the period of excitation is less marked and that the anesthetic state is more profound and less difficulty thereby encountered from struggling, spasm, and tremor. Chloroform *is* more easily handled in the sense of being carried, for it and its paraphernalia are less bulky, but the same amount of experience in manipulation of ether will soon convince the most incredulous of its great convenience and ease of administration, and these are the only questions which, in this particular discussion, should be admissible. It is very necessary to have a good apparatus to give ether on account of its great volatility, and since the spray apparatus of forty years ago many hundreds of cones have been invented. Of those which I have used, I prefer Clover's, but lately, in Europe, three inhalers have entirely displaced it—Julliard's, Chalots, and especially Wanscher's, which last bids fair to become the inhaler of the future. As regards the ether employed, it is of course important to have it pure, anhydrous, free from alcohol, boiling at 35° C. without odor or residue and without blue discoloration after addition of dilute sulphuric acid.

General anesthesia with ether ought to be obtained within six or seven minutes certainly, occasionally in two or three minutes, except in alcoholics. It requires, according to Angelesco, about 150 c.c. of ether for one hour of anesthesia with a closed inhaler, 200 c.c. for two hours and 300 c.c. for three hours. A man requires about one-third more than a woman. The slow method of administration is altogether to be preferred to the rapid, massive, and asphyxiating variety. The aspect of the patient anesthetized by ether is characteristic. There is first a mild period of excitation, increased only when the ether is given too concentrated from the first, but which is altogether insignificant in the vast majority of cases.

At the same time there is a slight cough, often absent if the vapor is not strong. The face becomes a little congested and more so if all air is excluded, in which case even cyanosis may intervene. In proportion as the anesthesia becomes more complete the respirations become regular, profound, and noisy, the last due to mucus in the bronchi, and all combined forming a guide as to the degree of anesthesia. The conjunctival reflex is lost. This aspect does not change with ether during the anesthesia. After the operation the effects last according to the length of the anesthesia. If prolonged one-half hour the effects last ten to twenty minutes, if two, to two and one-half hours, sleep may last one-half hour or even more, but never do we note that shock and prostration so often seen after chloroform. On waking there may be some excitement and mucus secretion; sometimes a slight chill, particularly in the extremities. Thirst and headache are fairly common, and lumbar pains, with occasional albuminuria. The contrary exists with chloroform, the period of excitation often wanting with ether is present usually. If it is troublesome with ether it is due to mal-administration. A cough occurs in 4 per cent. of the cases of ether anesthesia. Facial congestion is present in 90 per cent. or more, but it is not dangerous. Cyanosis should be avoided by careful attention to administration. Salivation is present in about 95 per cent. of the cases. It varies greatly in amount, under some circumstances continuing notwithstanding constant care, while at other times it may hardly be said to exist. It does not amount to much unless it becomes tracheobronchial, in which event it slightly impedes respiration. Ether may aggravate pulmonary diseases, if they exist, but does not seem to produce them any easier than chloroform. Vomiting is much less frequent with ether than with chloroform, when it is pure, and when the patient has not eaten on the day of operation. It is altogether rare for a chloroform patient not to vomit either during or after the administration of the anesthetic. Not so with ether. Julliard gives only one case of vomiting in twelve administrations; others, one in thirteen or one in fifteen. After ether it is common to have a little mucus regurgitated, but it is not violently projected. Vomiting does not last, as often occurs with chloroform, for hours after its administration. The respirations are very typical with ether, are always regular and attended with sounds audible at a distance. They become more rapid during the first quarter of an hour of anesthesia, remain at one figure during its maintenance, and gradually descend. They rarely get over forty-five per minute. The pulse is strong and regular and will remain so, often for two hours. The maximum is about 115 per minute. This rapidity is not annoying because the pulse is strong, but with chloroform the pulse is often 140, and weak besides. The temperature declines notably under ether in the first hour, 2° to 2½°. It is due partly to evaporation, immobility, slowing of oxidations, but we do not know why ether produces greater reduction of temperature than chloroform. The pupils dilate before anesthesia is profound and then contract and remain so. Upon awakening the pupils dilate again.

A good many objectors to ether say that it causes nephritis. On animals, experiments were long ago made which pointed to the comparative innocuity of ether as regards the kidneys. Ether is less irritating to the kidneys according to unanimous consent of all experimentors. As to post anesthetic albuminuria, in 116 etherization, Angelesco found fourteen times a transient albuminuria disappearing in three or four days, and my own investigation at Columbia Hospital, in the gynælogical service of Drs. I. S. Stone and J. W. Bovee, showed figures approximately similar.

Let us sum up in a word some of the great practical advantages of ether.

1. The excitement stage is rarely seen except in alcoholics, and is more violent if the anesthetic is hurried.

2. All the time the patient is kept under ether a sonorous sound is heard, contrary to what passes with chloroform, where respiration is silent, so much so that the ear may have to be placed close to the chest to hear respiration. This snoring is the tranquility of the surgeon; his ear perceives it and he is not preoccupied with the condition of the patient. He does not have to stop to ask "if all is well;" "if the patient breathes well," &c.

3. If the anesthetic is given in too large doses and is accumulating the snore is transformed into a deep rhon-

cus, grave, and less regular, the face becomes cyanotic, the eye is congested. It suffices to remove the mask and to pull out the tongue and all is well. But there never appears that pallid tint, that cadaveric look which we see preceding a chloroform syncope.

4. The pulse, very active at first, soon slows, becomes regular, and is always strong and vibratory, contrary to chloroform narcosis, in which is rapid and soft.

5. The heart-beats are strong. Here is the indisputable advantage of ether. The etherized never have that terrible, sudden syncope, coming like a thunder-bolt out of a clear sky, followed by death, notwithstanding all we can do.

6. The accidents with ether are purely respiratory, slow and progressive, and consequently they leave us time to act.

7. The operation terminated, the patient may recover perfectly in one-fourth to one-half of an hour of his normal animation and color; there is none of that adynamia which we observe with chloroform. As Poncet has said, "the chloroformed are in a state of apparent death, the etherized in a state of profound intoxication."

8. Vomiting is certainly less frequent during and after ether. Of course a good deal of mucous comes up, but the patient can often eat an ordinary meal on the same evening.

Such is the comparison. Ether stimulates the circulation and heart, so it is especially precious in reduced patients. It is certainly less dangerous than chloroform, not only because the figures show this to be the case, but because the latter attacks the bulb and produces vasomotor paralysis and deleterious effects far beyond our control to limit. In ether the danger is more respiratory; it is slow and we can intervene, often successfully.

Let us look for a moment at the comparative statistics.

The Compte-Julliard-Gould tables contain 638,461 administrations of chloroform, with 170 deaths; 300,157 administrations of ether, with 18 deaths; giving chloroform one death in 3,749, and ether 1 death in 16,675. In the proceedings of the German Surgical Society, 1891, 66 European surgeons reported 23,000 cases of chloroform with 6 deaths, 1 in 3,776. At the 24th Congress of German Surgeons, 1895, statistics for 5 years showed for chloroform 1 death in 2,909.

American practice shows ether 1 death in 6,004.

The Hyderabad commission placed the mortality of chloroform to ether at about 2 to 1.

So also do the statistics of St. Bartholomew's Hospital, more favorable to chloroform than most statistics, place the relative mortality of chloroform to ether in the ratio of 4½ to 1.

Wood said in his Berlin address: "I doubt very much whether one-third of the deaths from anesthesia are reported; certainly not one-third of the cases I had personal knowledge of have been publicly recorded; moreover, the pressure to conceal deaths from chloroform is greater than when the lethal dose is due to ether. The surgeon who uses ether feels that he employed the safest anesthetic and that he will receive no blame if a death occurs from it and he feels, also, that he has a rare case to put on record, which will give his own name a prominent place in anesthetic literature. Whereas, a surgeon who uses chloroform knows that if death occurs from the anesthetic, a large proportion of the profession, at least in the United States, will condemn him, either in public or private, for the use of this drug, and that he will be fortunate if he escapes being publicly condemned by a coroner's jury. Moreover, deaths from chloroform are only too common, so that the surgeon has nothing to gain and much to lose by publication of a chloroform death, and, if possessed of the average human nature, holds his peace.

Let me close this rather desultory account by quoting the phlegmatic and metaphorical opinion of Alfonso

Aguilar, which I read recently in a Spanish journal. This gentleman prefers chloroform and ends up an article by stating that the only advantage of ether over chloroform is that any one can administer the former but not so the latter. With chloroform he says the patient ought to be kept well asleep and the anesthetizer attentive and wakeful, while during etherization they can both go to sleep without inconvenience.—*Dental News.*

ARTICLE III.

FACTS ABOUT STEEL.

A prominent manufacturer has issued what he calls a steel catechism, giving much information about steel. It is as follows:

Q. What is steel?

A. A metal composed of from 97 per cent to 99.06 per cent. of iron, and from 3 per cent. to 0.04 per cent. of carbon is properly called steel. Many other substances, however, are commonly found in steel. Among these are sulphur, phosphorus, silicon, copper and manganese. These ingredients give various properties to the metal according to the amounts present. There are also several alloys of steel with other metals, but these are generally designated by hyphenated titles, such as "chromo-steel," "nickel-steel," etc.

Q. How is steel made?

A. In many ways, if we consider details. The principal methods are three. The resulting products are known as crucible steel, Bessemer steel, and open hearth steel.

Q. What is crucible steel?

A. Crucible steel is obtained as the result of fusing together in a crucible the substances desired in any quantity of steel.

Q. What is Bessemer steel ?

A. Bessemer steel is made by forcing a blast of air through melted iron. By this process the substances not desired in the steel are burned up. As some ingredients which are needed are also consumed, these substances (carbon, etc.,) are added before the liquid metal is permitted to cool.

Q. What is open hearth steel ?

A. Chemically the open hearth method is substantially the same as the Bessemer process. But in making open hearth steel the forced blast is done away with and the metal while melting and after complete liquefaction is kept exposed to the air in such a way that the impurities are oxidized or slowly burned out of the iron. The constituents other than iron are added before solidification. It is wholly immaterial whether the mixing of the iron, carbon, manganese and the rest is done in a crucible, a Bessemer converter, or an open hearth furnace, so long as the same materials are compounded with equal skill, and the steels treated after manufacture with the same care and judgment.

Q. What is "cast steel ?"

A. All steel made by the processes which we have discussed is really "cast steel." That is, the metal becomes steel while melted, and is then run in molds. The name, "cast steel" should be restricted to steel which is cast in the shape in which it is intended to be used. The result is inferior for most purposes to that obtained by forging and similar methods. There is much confusion, however, in the popular use of this term.

Q. What is "tool steel ?"

A. The term has no scientific meaning. Those who use it mean any steel suitable for making tools. It may be crucible steel, Bessemer steel, open hearth steel, or steel made by some less important method. For no good reason the name, "tool steel," is often regarded with almost superstitious awe. The agent of the steel-maker calls a substance "tool steel," knowing little or nothing of its composition and properties. The steel-user buys it, the workman makes things of it, the consumer buys and uses the things. Sometimes the steel is adapted to its use and everybody is satisfied. Sometimes it is not, and the consumer finds fault and the agent sells no more steel to that manufacturer. Meantime nobody concerned, except the original maker, has the least idea what the stuff called "tool steel" really is. No manufacturer knows what he is buying unless he has a laboratory where his purchases can be tested.

Q. What is "machine steel."

A. That is another shop name. It is applied to any steel which is soft enough to be easily cut and drilled.

Q. By the way, what is nickel-steel ?

A. A steel containing, besides the ordinary ingredients, perhaps 5 per cent. of nickel. It has a tensile strength of over 100,000 pounds to the square inch against about 55,000 pounds in the tubing ordinarily used.

ARTICLE IV.

TRICHLORACETIC ACID AS A SOLVENT OF NECROSIS.

BY H. W. ALLWINE, D. D. S., OMAHA, NEB.

Much has been and is written on the treatment of pyorrhea alveolaris, but it is not my intention to discuss the disease in this connection; but on account of the uniformly satisfactory results reached by using trichloracetic acid in the treatment of pyorrhea, to earnestly advocate it. By a properly continued use of this acid at regular periods, and an antiseptic mouthwash at all times, I have obtained better results than by any other treatment.

Knowing that the treatment of pyorrhea alveolaris requires medicaments which dissolve calcareous matter as well as break down diseased soft tissue and stimulate new granulations, I determined to give it a thorough test in treating a case of necrosis that was sent to me, which I now describe. There is no reason, in my mind, why treatment of the two diseases should not be very similar.

Last June Mrs. B. consulted a physician concerning a trouble apparently over, or at the symphysis of the inferior maxillary, and the case was placed in my hands by him. At that time the muscles about the chin were very tender and painful to the least motion, swollen, and of a dark blue color on the outside, as well as about the roots of the teeth. A fistula had formed over the root of the left lateral, from which pus exuded. This tooth was also quite sore to the touch.

I believed the pulp of this tooth was dead, and proceeded to drill into the lingual surface of the tooth. Before proceeding far I discovered my error. I forced mild antiseptics into the fistula, applied a counter-irritant, and dismissed the patient, that I might give the case careful study, In a few days the lady returned. It being a clear day, I noticed a very slight discoloration of the two centrals. These teeth were not in the least sore, but on drilling into them I found the pulps dead. The probe passed through the fistula indicated the unmistakable roughness of necrosis to the touch of the physician and surgeon, and to my own.

The quickest way out of the difficulty, I thought, was to make an incision and remove the cause. I also suggested to the patient the possibility of dissolving the dead structure with acid, though it might require a long time. She much preferred a fair trial of the latter method, so about once in two weeks I injected a 10 per cent. solution of trichloracetic acid. Twice a week a mild antiseptic was passed into the left central, through the fistula. The apex of the right central was open nicely, but I could force nothing through the fistula from this tooth. At each visit I packed the canals with cotton saturated with mild antiseptics, and carefully sealed the cavities. I thus treated the case nearly three months. Indications being very favorable, I packed the canals, sealed the cavities, and told the patient to return in two weeks. At this time a very little healthy serum was found in the left central. I treated the case as before, and told the patient to return two weeks later. Then the conditions were such as I wished to have, and I proceeded to put in the fillings. This was done the latter part of September. December 11 I saw the case. The condition was entirely satisfactory, and I believe a permanent cure was effected.

I will state briefly the history of the case. In February, 1895, Mrs. B. noticed a slight neuralgic pain in the chin, the muscles inclining to be a little stiff. This continued to grow worse, and the latter part of December, 1895, a fistula formed, as above described, and pus continued to discharge. She herself made various local applications, but the condition continuing to grow worse, she became anxious and sought advice, as previously stated.

It is very desirable that causes should be ascertained. In this case I do not find one that to me is satisfactory. Mrs. B. is 32 years of age, of mixed temperament, the bilious predominating, and of very regular habits. She is a regular, systematic pedestrian. Her health is and has been good. No calcareous nodules or deposits were found in the root canals. No injury of any kind had been received in the vicinity of the trouble. Prior to coming here from New York State her energies were taxed somewhat, on account of sickness in the family. I should not look to the climatic change as the cause. November, 1894, shortly before the appearance of disturbance, there was suppressed menstruation, which she thought at the time might be impregnation, but it was not. Was the cause a combination of the last three conditions and changes?—*Atlanta Dental Journal.*

ARTICLE V.

PYROZONE.

CONRAD E. WETTLAUFFER, D. D. S.

Concerning its use for bleaching. The first procedure will be to cleanse the tooth thoroughly from all decay. In case of an incisor, apply the rubber dam to the one to be bleached, and to as many adjacent teeth as may be necessary to obtain space and light. The teeth not to be bleached should be covered with wax or vaseline, to prevent the pyrozone from attacking them. If of a soft texture, when cleansed, wash out with 95 per cent. alcohol, placing a stopping of some suitable material up the pulp canal, such as chloro percha, oxichloride of zinc, with fibers of cotton, or whatever you are in the habit of using in your practice.

Of course you are supposed to have previously reduced the canal to an aseptic condition. After drying out thoroughly with alcohol, wash out with aqua ammonia and dry well. Then take a probe, either gold or platinum, twist a pledget of cotton around it, saturate with pyrozone, 25 per cent. solution, and insert in the tooth and canal, squeezing out the pyrozone.

Then apply hot air on both labial and platina surfaces to evaporate quickly, and continue in this way till the tooth is bleached to its natural color. A dense, hard enamel and dentin will occupy twenty, forty or sixty minutes, and in some cases twice as long; a soft dentin I have bleached in ten or fifteen minutes. The ether in which the pyrozone is dissolved, will penetrate the canaliculi and absorb the protoplasmic matter, and some consideration must be given this fact in the subsequent filling of the teeth, to prevent a return of the discoloration.

I would recommend the wiping out of the cavity and canal with either a thin solution of white shellac, gum copal or Canada balsam. The Canada balsam or white shellac will penetrate by capillary attraction quite a distance through the tubuli, and will also make a water-tight coating in any checks of the enamel, which are so often manifest in devitalized teeth.

I have never met with failure in the bleaching of a tooth in the manner here described. Let me cite a case. Mr. A., aged 40 years, came to me with a left central incisor very badly discolored. which had been so for twenty years. I treated the tooth as above for nearly two hours, and succeeded in restoring it to its normal color. The discoloration returned in a marked degree in three or four days. I attributed it to a gold filling in the tooth. I removed the filling, treated the tooth as before for half an hour, and succeeded in restoring it to its natural color, and it has remained in that condition ever since. This to me proved two things, viz: That pyrozone is a good bleaching agent, and also that a gold filling in a tooth to be bleached must be removed.

I have also found pyrozone very useful in the insertion of all kinds of crown and bridge work. We all know that bleeding of the gum gives us great trouble in these operations. I obviate this by applying a 25 per cent. solution of pyrozone to the gums, which acts as a styptic, and in my hands has never resulted unhappily. I also use this remedy in the same manner for the insertion of gold fillings at cervical margins, or two applications rendering the gum perfectly dry for ten or fifteen minutes which is ample time for the insertion of an ordinary filling. In abscess with fistulous opening, I use a three per cent. solution inserted with a hypodermic syringe, forcing the solution through the fistulous opening. Its use is not as painful as that of peroxid of hydrogen. When the alveolus has been perforated by the progress of of supperation, and the soft tissues have not yet sloughed, I advise free lancing over the congested parts, and the insertion of a pledget of cotton, saturated with a 25 per cent. solution, which should be allowed to remain for a few moments.

For a putrescent pulp, I apply a five per cent. solution pyrozone, which at once disinfects, permitting the removal from the canals of disorganized tissue, without the disagreeable odor which is often so offensive to both patient and operator.

I also use a three per cent. pyrozone for the removal of green stain on teeth. Apply it with an atomizer, spraying the teeth. It is efficacious, and pleasant to patient and operator.

For pyorrhea, after removing thoroughly all the salivary and sanguinary deposits from the necks and roots of teeth, $H_2 O_2$ will be found the best agent as a chemical cleanser and antiseptic for washing out the pockets, bringing the *debris* to the surface and putting the parts in hygienic condition. I also instruct the patient to use an atomizer, spraying the gums and mouth with a three per cent. solution of pyrozone and listerin, equal parts three times daily, till the disease is to a great extent conquered.—*Dental Practitioner.*

ARTICLE VI.

DISCUSSION ON SOLDERING.

Dr. E. D. Swain: In 1861, when I left my patients temporarily, after a practice of five or six years in different parts of the country, every man knew how to use the blowpipe. Every man knew how to solder. Not only that, but to make his own plate and to make his own solder. I presume Dr. Cushing remembers very well the difficulties he had in learning to use the blowpipe. I do. But when it came to the idea of keeping up a continuous blast, it was very sudden, and from then until now it is one of the things we cannot forget. I was out of the profession for nearly five years, and when I returned to practice such a thing as soldering was hardly known in a dental office in the northern part of this country, nor even the southern part. There was no occasion to use the blowpipe. Consequently the condition of things which Dr. Peck saw in a dental college had only then come about as a result. The men who were educated between 1861 and the time when crowns and bridge-work first began to be made were not taught to solder, but are now to some extent teachers and demonstrators. There was hardly anything but vulcanite except in a few offices, and the dentists who occupied those offices were considered old fogies. Metals were not used, but the introduction of gold crowns and of bridgework came about, and the working back again into metal for partial plates to a considerable extent has brought about a change, and a change for the better without question.

After listening to Dr. Peck's paper and seeing the demonstrations which he has made, I feel that he has left very little for me to discuss. Of course, the members of the society might give us some points as to their particular mode of operating, but as my own method is so near like that described by Dr. Peck, I have very little to say upon the subject except to remark that in order to do a good piece of soldering, after making everything clean, and even sometimes taking the trouble to scrape the surface on which you are to apply the flux, you should heat the investment and the plate and teeth first almost, if not quite, down to the flowing of the solder, and then directing the blaze upon the soldering; it drops down to its place· smoothly, making the use of the chisel almost unecessary Another thing which is accomplished by that is that the solder always flows toward the hottest point, and if the investment is heated beneath and behind the teeth themselves, the solder flows into the interstices and makes good solid work. The solder flows under and between the backing in the plate and makes it strong between. If you attempt to make it solder otherwise, and the flame is put to the solder too early, it produces a sort of sweating process, in jewelers' parlance; the piece of solder is fused sufficiently to adhere or cohere.

I do not know that I can give you any new points in regard to soldering. Cleanliness from begining to end is one of the things which should always be looked after. It is poor policy, if not dangerous, to attempt to solder a piece of work that has not first been boiled in pickle or in alum water, in order that the oxide which forms from the alloy in previous heatings shall be removed. Either that should be done, or the plate and backing should be scraped to give a clean surface.

Dr. A. O. Hunt: I agree with Dr. Swain that Dr. Peck has been so painstaking and careful in regard to the smallest details in this demonstration of soldering without investment that there is very little to be discussed. However, there was one thought came to me at the time when he mentioned the unequal expansion of platinum and porcelian. It is this: that if a large piece of solder is laid over all, so that if, at any time during the process of rotating the flam in, under and about the investmenc, it cannot come in direct contract with the platinum pins, causing the procelain to check. A plate of heavier solder prevents the too rapid transition of heat to the metal underneath, and thus equalizes more nearly the expansion of the metal and porcelain.

I was very much pleased with the demonstration of soldering with porcelain not invested. It is well known that porcelain in the process of fusing has to withstand a very much higher degree of heat than that required for the solder to flow. But very few would always be sufficiently painstaking and careful about their methods of applying the heat to the porcelain if the crown or piece was not invested. For this reason the investment is of some value; but it is not absolutely essential, as Dr. Peck has demonstrated.

I feel like saying a few words in the line of Dr. Swain's remarks. From 1861, or perhaps a year or two earlier than that—from 1859 to 1860—up to 1880, there was hardly any metal work done that required soldering by those entering the profession during that period. If gold was used as the base of the denture, the soldering was not of a particular character; it consisted merely in the soldering of loops on a plate to retain rubber or celluloid. This was before bridge-work was introduced into the profession to any extent. For twenty years or more the delicate manipulation of metals and porcelain combined was a lost art in dental practice. The experience gained before that time in the art of using the mouth blowpipe skillfully will never be forgotten. I prefer the bellows. There are features in the use of the latter that I regard as as important. With the blowpipe in the mouth, the head must be at a fixed distance from the flame nearly all the time. One hand is occupied in directing the blowpipe, while in using the bellows both hands and the head are free, so that one is enabled to see any part of the work to better advantage. A continuous flame can be managed by the bellows with so little effort that I am one of those who believe it is a decided improvement over the mouth blowpipe. One other point is with reference to the kinds of flame to be used. A fine reducing flame of the blowpipe is rarely ever called for in joining the points of a crown or bridge. The brush or larger flame, which will cover the greater part of the piece to be soldered, is more desirable, as one is less likely to break the porcelain, the heat being more evenly distributed over a larger area.

Dr. W. H. Taggart: I wish to commend Dr. Peck's paper, and if I am wrong in the criticism I am going to make, I wish the doctor would draw my attention to it. It is this: In the crown that he soldered for us, the parts were simply united with the solder, but the places where the solder would want to be flushed in to contour it, or in additional places where we desire to bring out the full contour of the tooth, I believe he did it with the flame.

Dr. Peck: Yes, I did. I shall have occasion to do it again in my office to-morrow.

Dr. Taggart: While Dr. Peck does that, it seems to me it is much harder to do it that way than to draw the solder to one point with the blow-pipe flame. As. Dr. Swain has said, the heat will go to the hottest part, and there is a tendency for all the solder, when it has become melted, to gravitate to one point, leaving parts that are already soldered properly. You have to rotate it to get it to stay at one point. It is much easier to do this with the blow-pipe than with anything else.

Again, Dr. Peck spoke of putting on all pieces of solder at one time. I would ask him whether he thinks that is desirable.

Dr. Peck: Yes, I think it is in such a case as I described.

Dr. Taggart: It seems to me the fewer pieces of the solder you put on at one time the better you fuse it, and get it to flow into all places without forming pits or pockets. It would be an advantage to put on pieces as they melt, than to put on all pieces at one time. These are the only criticisms I would make.

Dr. F. N. Brown: Crown and bridge-work are my food and drink; I scarcely study anything else. I do not proceed exactly as the essayist. The first thing I do when I procure any teeth from the dental depot, is to remove every particle of wax and allow none to come in contact with my work while in process of construction. I use "Parr's wax flux" in waxing up and holding parts together until the piece is invested. It is then placed over a Bunsen heater and the "Parr's wax flux" burns out, leaving the piece fluxed. I then sprinkle it with a little dry powdered borax, and place enough solder on to cover the pins of the teeth. I then proceed to heat the investment and solder up, adding one piece of solder at a time. I never remove my piece of work to a soldering block, or anything else, but let it remain on the Bunsen heater while soldering up.

Dr. Peck says, All breakages come from backings being so positioned as to put strain on the porcelain in cooling." I think most breakages come from allowing the porcelain facings to touch, and that from expansion the facings are cracked. In soldering, I never use the mouth blowpipe; I prefer a blowpipe on a stand, so that I can keep a foot-bellows or compressed air apparatus going, then having the flame constantly directed on the work.

In this way there is no cessation of heat at any time. The use of "Parr's wax flux" in bridge work cannot be overvalued.

(Here Dr. Brown demonstrated on the blackboard.)

Dr. B. J. Cigrand: I desire to say a few words in reference to Dr. Peck's paper. It is a paper that I think will do both the older and younger members a great deal of good. He has emphasized the unimportance of investment; we have learned that the investment is for the purpose of only holding the parts in apposition and position while soldering; whereas in single small pieces, where the parts can be held in apposition by wire or otherwise, investment is not necessary. The lesson taught us this evening I learned some years ago under somewhat exciting circumstances. When I first started to practice dentistry, one of my first cases called for the application of a bridge to restore the teeth. While I had the bridge and large investment on the fire, my attention was directed to the fact that I had some errand to do down town. I went down town to one of the dental depots, unintentionally left my investment and bridge on the fire at the office, and did not return for about two hours. While I was down town it occurred to me that I had left my bridge and investment on the fire, and you may be sure it did not take me very long to catch the first car. When I reached my office I believed that the bridge was spoiled, and as I am somewhat of an optimist, I tried to make the best of it. I made up my mind that the bridge was spoiled. I saw that it was red-hot and thoroughly radiated, and after using the blow-pipe a little, the solder flowed away like so much cream.

I was determined, in the event of a failure, to have the personal pleasure of having brought it about, executed my intent, little thinking that an underlying principle in soldering would be revealed. I threw the case in powdered plaster of Paris to cool, and, upon disinvesting the case, I found I had made one of the best solders in my life; the secret of which is: use the blow-pipe very little and get the case good and hard. I hardly ever use a blow-pipe except in large bridges. I use the Haskell-Bunsen burner, and I never employ a blow-pipe in the production of what we call barrel or telescope crowns. I make the entire operation with a Bunsen burner.

Another point Dr. Peck has shown us is how to prevent the solder from flowing in the directions where he does not want it to flow, and to attain this he uses ordinary stove blacking. I employ instead of this agent a paste of whiting and rouge, and find it fully answering the purpose.

When I make a barrel or telescope crown, after I have made the band and readjusted the cusps, and invert it and proceed to solder it to the band, the band may, while in the flame, become unsoldered. If the stove blacking or whiting, whichever you prefer, is used on the joint of the band, you can solder the cusp full of gold, and there will be no unsoldering or opening up of the band. I have recently resorted to the method of filing all my solders as they come from the dental depots into almost a dust; in order to eliminate all the steel, etc., from the filings, I pass through it a large magnet; this way your solders will melt a good deal quicker, since you create a greater surface for the flame to play on. With reference to holding the crown in the flame and the likelihood of the solder jumping out of position on account of the puckering up of the borax, if we take the crown and use gum arabic, making it into a mucilage over the borax, we can force or hold the solder wherever we like, and it will stick there.

I believe Dr. Peck has emphasized the true underlying principles of soldering better than I have ever heard or read of. Briefly, I would again say, get your case well heated and seldom use the blow-pipe.

Dr. J. H. Woolley: I was glad Dr. Cigrand brought out a point concerning borax which is not touched upon very frequently. Borax in the process of melting has a tendency to move the solder. If the borax is melted previous to its use and ground finely, it will not interfere with the solder, so that that process makes the placing of the solder just where it naturally would belong, or where it was needed.

Dr. Peck (closing the discussion). One point referred to by Dr. Hunt, that of placing large pieces of solder over the pins to prevent them from becoming unduly heated, may be of service in some cases, but if the investment is thoroughly heated from the under side first, as indicated in the paper, such precautions as the one cited above are positively unnecessary.

As regards the use of the bellows, I do not object to it. Indeed, to those who are in the habit of using it I would say, Never give it up. I do not care to use it, because I have become so thoroughly accustomed to the mouth blow-pipe that I use it in all cases without the slightest difficulty or fatigue, and, too, I believe I have better control of the flame than one can possibly have when using the bellows.

This crown can be as easily contoured in the Bunsen flame as if it were invested. The solder can be melted on one side to any extent desired without disturbing that on the other side in the slightest. It may be easier for some to invest and reinvest for the purpose of contouring, but not for me.

It may not be out of place to state that the crown I made in clinic before the State society last spring was heated and cooled five different times for the purpose of perfecting the soldering and contouring, which also demonstrated the fact that there is no possible danger of breakage with this manner of soldering.

The "correction" cited by Dr. Taggart, that in soldering large cases very small pieces of solder should be melted into the crevices, etc., after which more is added from time to time until the case is completed, I consider one of the greatest mistakes one can make in doing this work. What is the use of occupying the extra time necessary to permit the case to partially cool, to place more solder, and to reheat, and to repeat the foregoing several times until the soldering is completed, when all can be done in most cases with one heating. All that is necessary is care in the preparation of the case for soldering; the crevices must be thoroughly cleansed and fluxed and the case thoroughly heated from the under side. If this preparatory work is not thoroughly done, one must not expect desirable results.

However, you will remember I stated in the paper that we have our individual methods of producing results, and we are oftentimes very prone to consider our method the best. It matters little to me what method one uses, provided he uses it well and gains the desired result within a reasonable time.

I do not think the teeth or facings in contact one with the other are any more liable to break than when they are spaced—providing the case is evenly and thoroughly heated. Many times I have soldered large cases in which the teeth were in close contact one with the other; in fact, in some instances even jointed together, and I haven't gotten into trouble. I can't help believing that the predominating cause of the breakage of teeth and facings is the untimely heating of the pins.—*Dental Review.*

Monthly Summary.

PITIABLE CONDITION OF A GIRL FROM USE OF X-RAYS,—Miss Josie MacDonald of 9 West Forty-fifth street, New York, is lying at her home in a pitiable condition as a result of a 20-minute exposure to X-rays during the latter part of June, when an X-ray photograph of her upper left jaw was taken by a man whose name is supposed to be O'Connor. The young woman had for some time previous been suffering with intense pains in her jaw. She went to Nelson Shields and George F. Jernigan, dentists, who diagnosed her disease as necrosis.

In order to determine the exact cause they decided to have an X-ray photograph taken of the jaw to see if there was an old root there. The young woman was taken to the laboratory of Mr. O'Connor, who had been recommended to the dentists by Dr. Lee. The first photograph taken was not a success on account of too short an exposure, and it was resolved to have another one taken. The second photograph was taken the next day, with an exposure of 20 minutes, and proved the dentists' diagnosis correct.

A few days afterward Miss MacDonald's face began to swell and grew black. Dr. Henry Griswold was called, and he commenced treating the case as he would an ordinary burn. The hair on one side of the patient's head began to fall out, and in a short time that part of her scalp was bare. Her face was blistered, and sores formed all the way down her neck, shoulders and arm. A scab formed over the blister, and when it fell off it disclosed the raw flesh. Her left ear swelled up, and she lost her hearing on that side. Constant applications of oil have been necessary day and night to allay the pain arising from exposure of the flesh to the air.

Dr. Griswold said that he could not tell who was responsible for the condition of his patient.

Miss MacDonald has placed her case in the hands of Sullivan & Cromwell, attorneys, at 45 Wall street, and an action will shortly be commenced against the dentists.

FILLING FRAIL TEETH.—We should remember when dealing with frail teeth, having large cavaties, that great masses of gold placed in contact with frail enamel walls must result in disaster from the mere effects of expansion caused by extremes of heat and cold. At one moment we drink ice water, bringing the temperature of the teeth and gold fillings down to thirty, and then we deluge the mouth with scalding hot tea, the result being a rapid and unequal rise of temperature, the gold responding and expanding to a greater degree than the enamel.—Dr. Hill, *Items.*

THE BACTERIOLOGY OF BALDNESS.—The microbe which causes baldness has been discovered after patient research by Sabouraud, who by using cultures of the microbe has produced alopecia in the sheep, the guinea-pig and the rabbit. If, as has been often said, pyorrhea alveolaris is to the teeth what baldness is to the hair, we may expect shortly to have the pyorrhea microbe discovered, and perhaps then we may discover some specific treatment for this disorder, which seems to be much on the increase.

ROOT PERFORATION—A NEW METHOD OF TREATMENT—My first case of traumatic perforation occurred about six years ago, in a right upper lateral incisor, which I was called upon to crown. The root has been filled some years before with gutta percha. This I drilled out to what I judged to be about three-fourths the depth of the root, which at this point seemed to take a bend to the left. Having reamed out the canal, and fearing it was not quite deep enough to accommodate the pin. I unwisely proceeded to drill the canal a little deeper. I had almost succeeded to my satisfaction, when the patient showed sudden signs of pain, and on withdrawing the drill, wiping out the canal, I found traces of blood. I immediately dried out the canal and carefully dressed it with oil of cloves. Next day the case showed a distinct swelling on the gum over the seat of the perforation, but within three days this swelling had entirely disappeared and all irritation had subsided. At a subsequent appointment I removed the dressing, dried the canal out thoroughly, and proceeded to seal the perforation in the following manner.

Having mixed copper amalgam quite thin I gently carried a small portion of it to the apex with a blunt-pointed instrument rounded at the end—in fact, an old excavator with the point broken off. The amalgam was gently spread round the upper portion of the canal, a rotary motion being used to carry it evenly around the interior. No pain was caused by this proceeding, but the patient was just aware of a very slight sensation while it was being done; this sensation subsided when the point was withdrawn. The interior of the cavity being thus lined, its depth was not seriously lessened. The patient was then dismissed till the following day, when the amalgam had hardened thoroughly, and at the next sitting a Richmond crown was set, and has done good service up to the present time.—John Girdwood, in *International Journal.*

TO OBTAIN absolute cleanliness of tooth before adjusting the rubber dam or for crown or bridge work, wipe off the tooth with extracts of eucalyptus or chloroform.—*Dental News.*

THE FOLLOWING RULES for the care of the eyes conform to well-established laws of eye-physiology :

Avoid reading and study by poor light.

Light should come from the side, and not from the back or from the front.

Do not read or study while suffering great bodily fatigue or during recovery from illness.

Do not read while lying down.

Do not use the eyes too long at a time for near work, but give them occasional periods of rest.

Reading and study should be done systematically.

During study avoid the stooping position, or whatever tends to produce congestion of the head and face.

Select well-printed books.

Correct errors of reflection with proper glasses.

Avoid bad hygienic conditions and the use of alcohol and tobacco.

Take sufficient exercise in the open air.

Let the physical keep pace with the mental culture, for asthenopia is most usually observed in those who are lacking in physical development,—*Pacific Med. Record.*

DIFFICULT PARTIAL IMPRESSIONS.—Several weeks ago a lady presented, desiring a partial upper denture. An examination of the oral cavity revealed a V-shaped arch with several sound teeth, posteriorly and anteriorily. Wherever possible I prefer taking plaster impressions in partial cases; I, therefore, proceeded in the usual manner to get a plaster impression. The teeth were at unfavorable angles, seriously interfering with the work. After several unsuccessful attempts and spending considerable time in trying to patch together broken pieces which were more intricate than a Chinese puzzle, I hit upon the following method : That portion of the plaster which came out intact, viz , the palatal surface, festooning teeth lingually, and partially covering the ridge where teeth were absent, I replaced carefully in the impression-tray, flowing *very* soft plaster where the first impression had been imperfect. I next passed the tray and plaster quickly into the arch, retaining it in position until the new plaster had set in. The cup was then easily removed, the new plaster fractured cleanly and in large pieces, some, however, remaining cemented to the original impression, making it a simple task to reunite the whole. The result was a perfect model of all the teeth, ridge, palatal surface, and condyles, from which I made a well-fitting plate.—Homer Heberling, D. D. S., in *Items of Interest.*

SUICIDE BY TAKING COCAIN.—An inquest was held on November 19th, on the body of a woman aged twenty-two, the wife of a wealthy American gentleman. From the evidence it appears that the deceased had suffered very much from toothache and neuralgia, for which the medical man had prescribed quinine and other remedies. On the 14th she was taking tea with her doctor when she suddenly complained of intense toothache. He took her to his surgery and placed some crystals of cocain in her tooth, putting back the cocain into the drawer he had taken it from. He did not see her again till he was sent for to the Hotel Cecil, where he was horrified to find she had abstracted the cocain bottle, and had taken its contents, some fifty grains, causing death. The jury, after a short deliberation, returned a verdict of suicide during a fit of temporary insanity. We can not understand how a person possessed of wealth should have allowed her teeth to become a source of such continual torture as appears evident. A caution also is needed when dealing with patients, to see that dangerous drugs are placed securely out of their way.—*British Journal.*

COCAINE solution decomposes in forty-eight hour. You need to prepare it fresh when you use it. If it is more than forty-eight hours old it will not give good results.—Dr. Meeker in *International.*

BLOOD-POISONING AFTER TOOTH EXTRACTION.—Dr. Port, of Munich, remarks that, "when we consider the large quantity of micro-organisms which flourish in the mouth, it is extraordinary that dental extractions are not more frequently a source of infection." Dr. Miller's book cites only sixty cases, of which about half the number terminated fatally, while the other half recovered sooner or later. Death generally occurred from septicemia, pyemia or meningitis. He gives a recent case of a young and vigorous man whose lower molar had been extracted by means of the key. He developed fever and died in four days. The autopsy revealed a large abscess in the neck, the pleural cavities held a large quantity of fetid brown pus, while the pericardium also contained pus. The abscess disclosed streptococci and diplococci, and the latter resembled the salivary septicemic microbe described by Miller.—*Brit. Jour. of Dent. Science.*

NEVERMIND THE OTHER FELLOW.—As a rule I do not like to have a patient tell me where he has been before, when he comes into my office. I do not wish to know who has done this or that. I give such patients very little encouragement to talk, and as a rule they keep things to themselves.—G. Newkirk, in *Review.*

INSTEAD of the method so frequently employed of heating gutta percha held in the plyers over the alcohol flame, use a disc or slab of porcelain; place it in contact with the heat of the flame; put your pellets of gutta-percha on this, and when sufficiently soft to be kneaded, work with cold instruments into the cavity.—*Dental News.*

A CURE FOR HICCOUGH.—A never-failing cure for hiccough that gives prompt relief is to draw in as much air as the lungs will hold, and retain it as long as possible. Once is generally sufficient, but if necessary it may be repeated.—*Dental News.*

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ARTICLE I.

THE CLINIC.

BY E. P. BEADLES, D. D. S., DANVILLE, Va.

Ocular demonstration is the best teacher. When a child sees a thing he will remember it easier than if only told about it. Men are simply grown-up children. A desire to learn something new is the foundation upon which all our dental associations rest. The clinic has been the favorite method of imparting knowledge. Many men attend the annual meeting for the clinic alone. They can read the papers and discussions in the journals; but cannot see the operations. This being true, the very best methods for conducting clinics should be devised. It is evident that the plans which have been in use by most of our societies have served their day. With a small number present, each man may be able to see what is going on; with a large number present nobody gets any satisfaction, the operator is crowded and worried, often failing to do himself justice.

The idea should be, not to have so many clinics, not so many operators; but good ones. Some men can teach, others cannot. There is a secret in being able to impart knowledge, to explain a thing so that the hearer may go home and perform the thing for himself. If those who have our clinics in charge for this year will select a few good men of known experience as operators and with ability to tell what they know, and will carry out the following rules, success will be theirs.

1. Have provided only one chair, and have that placed upon a raised platform near the president's seat.

2. Have only one clinic in progress at one time.

3. Let the society be in regular session during the clinic, with the president and other officers in their places.

4. Let each operator furnish beforehand to the manager of the clinic a list of whatever he needs to carry out his work.

5. Have placed on the platform a good blackboard.

Now with the members in their places the clinician is introduced and his intended operation announced. With the patient in the chair and with free use of the blackboard, he explains fully what he intends to do At a certain time those who wish to examine the case are allowed to come up, one or two at a time; this over, the operator proceeds with his work. If it will consume some time another subject may be taken up by the association, business transacted or a paper read, with the understanding that the operator can have the attention of the members whenever he desires it.

We are not students at college, and do not need to see all operations right through in order to be able to do them; a suggestion, an illustration, an explanation may be all that is needed in many cases, or a question asked and answered when all can hear at once. The manager will be able to do his work with greater satisfaction, having only one clinic on hand at a time. By the old plan he is at the beck and call of every operator, and is wanted in a dozen places at once. But possibly the most important point covered by the adoption of this plan will be the effect upon the operator. As it is now, good men often refuse to clinic, well knowing the difficulties under which they must labor. The operator knows that at best he can only explain his method to a few, and perchance the man next to him may be showing something very novel and has the "crowd." The first operator has spent time and trouble to get ready, and is showing something really valuable, but there is no one to see it. He completes his case in silence, steals off out of sight wishing "he hadn't."

By the plan here outlined no one who has been invited to clinic will be neglected. He will have the ear of the entire association, he will feel stimulated to do his best, and knowing this will prepare his best. Our prominent men will feel it worth their while to accept invitations to clinic, everything will be done orderly and "satisfaction guaranteed."—*Atlanta Dental Journal.*

ARTICLE II.

TO WHAT EXTENT AND WHEN ARE WE JUSTIFIED IN USING CATAPHORESIS? IS THERE DANGER OF INJURING THE DENTAL PULP OR OTHER TISSUES BY ITS USE?

BY H. T. HARVEY, D. D. S., BATTLE CREEK, MICH.

Paper read before the Michigan State Dental Society, June, 1797.

The history of the discovery of the principle underlying the cataphoric method presents some features of more than ordinary interest. Especially does it show thereby, that great study together with constant effort is required, and then only by slow progress are tangible results obtained. As has been said, "No great truth springs into completeness from one thought in an instant, but rather by an evolutional process, in which its possibilities are gradually developed and utilized for the benefit of humanity," and from that ever-flowing spring of thought and genius has been handed down to us the great principle of methodical cataphoresis. It is by no means new. Members of the medical profession experimented with electro-chemical anesthesia as early as 1832, and quite extensive experiments were performed both in medical and dental surgery in 1859. The results of experiments at that time were defined as follows: voltaic narcotism was attended with some eminent successes, and also with some singular failures, and that all objections to this method were removable.

It seems that the essential features of cataphoresis, after remaining in a dormant state for half a century or more, is resurrected, placed in a different aspect, or new light, and its practical utility brought forth.

The principal factors responsible for the resuscitation of cataphoresis is the intense interest manifested in utilization of electricity in dentistry. The therapeutic and analgesic properties of cocain salts, and the constant demand for the alleviation of pain caused our patients in the more severe operations in dental surgery.

It is not my intention, at this time, to discuss the ancient basic features of cataphoresis or detail its recent origin. This has been very ably placed before us, and I will now devote my time to cataphoresis as we find it today.

We who are interested in cataphoresis have now had the practical experience for a year or more of its use in our several practices, and no doubt, all acquiesce though our experience has been limited, we have used it sufficiently to admit of some merit in the principle involved in its use. There can be no doubt, however, but that there is room for improvement in devices for managing the electric current, and a decided need of an extended investigation in producing more effective medical solutions suitable for therapeutic treatment. It is not by any means conceded or demonstrated that cocain is the best drug to use as a dental obtundent, and there is much reason to believe that there is great merit in other drugs if developed.

Promoters of medical and dental science fifty years ago, with the salts of cocain unknown, produced wonderful results, and yet they were confronted with one of the great obstacles that we ourselves are unable to meet, that is imperfect electrical devices, and by that I mean that the problem of a continuous current, whereby it remains unbroken from first application until complete anæsthesia is produced.

The whole field of dental applications of the cataphoric principle is still in its infancy; diligent search for a complete realization of all its possibilities is required.

To what extent, and when are we justified in using cataphoresis? Surely you will agree with me, when I say that not all patients we operate upon demand dental obtundents.

The question is, what class of patients demand cataphoric application? To what extent should we go with those classes? How shall we differentiate between them?

A thorough study of temperaments is imperative in treating patients with cataphoresis; we should also understand thoroughly the maximum and minimum amount of electricity each case requires, and will tolerate, and yet, produce thereby the desired anæsthetic effect.

We should know what medicinal solutions are indicated in each case, where application is necessary. There are principles to be followed; positive rules to be established, studied and observed in order to co-operate with all other advancing, improved methods and devices, thereby rendering a perfectly successful operation possible.

While in attendance at the annual session of the American Dental Association at Saratoga, last August, I was greatly interested in hearing related some experiments which an inventor of an electrical dental apparatus, and an expert of a New York life insurance company had made, testing the capacity of different individuals as to the degree and amount of electricity they would tolerate, and what was requisite to produce contraction of various muscles. Brothers would vary from twenty to thirty-five volts. Father and daughter varying the same degree. Mother and son would require each an equal amount. The results of their experiments forced them to the conclusion that only by various tables of temperaments, with general diagnotic features could a safe and reliable rule be incorporated.

Another important and great obstacle is, time required in some cases, although I believe a skillful operator can, to some extent overcome this objection.

When are we justified in using a dental obtundent for excavating dental decay? I must define that question by my experience. I ascertain from a temperamental knowledge to some degree, what temperament the patient I am to operate upon possesses. If undecided by a casual glance, I test sensitivity of tooth with my excavator. If I find hypersensitive condition I make cataphoric applications in the usual manner. From records made in my practice in the past six months I was required to use an obtundent in 25 per cent. of the cases operated upon; out of one-quarter of the cases operated upon, in which cataphoresis was used, twenty-seven per cent. of these cases were absolutely seccessful, in seventy-three per cent. of the cases, pain from mild to intense, followed the application of electricity. I also found that all cases that proved satisfactory were of sanguine or sanguino-bilious temperament, and the patients who complained of intense and at times intolerable pain ensuing after the application of the electrical current, the minutest fraction of a volt, were those dark haired, black-eyed, nerve-bilious-tempered individuals. They possess teeth so sensitive that they respond to the slightest fluctuation of the current. I believe that could we produce a non-fluctuating, non-breaking current that by gentle, continuous applications of electricity, the most pronounced type of hypersensitive teeth could be reduced to perfect anæsthesia. With all other classes I have no trouble. There is in some cases that disagreeable sensation, as some choose to term it, upon application, and upon each succeeding increase of voltage of the current.

What current and to what extent should we use cataphoresis, must also be regulated by one's experience in cataphoric operations. To my mind the only safe and satisfactory one is a primary and secondary current; a commercial current is always unsafe, danger from cross wires; and is very unsteady; and I know of many prominent dentists who used a commercial current for their cataphoric operations, and found the current too unsteady, and also unsafe, and have placed a battery for use in their offices.

To what extent we should use this method, each must determine. Should every case indicate the application of cataphoresis, just to that extent should he use it. As to voltage required to produce structural anæsthesia, it usually requires from twenty-five to forty volts, no more should be applied, and in a majority of cases twenty-five volts will suffice. Fifteen volts is the minimum amount. I have been able to produce total anæsthesia. From ten to thirty minutes are required usually to anæsthetize a tooth.

I have also used Prof. Morton's Electrods, No. 1 in lancing alveolar abscesses and also his No. 2 Electrode (deepest) in extraction with excellent success.

Is there danger of injuring the dental pulp or other tissues by the use of cataphoresis ? I find by investigation that about ninety-five per cent. of the cases where the cataphoric application is made, that the tooth structure is much more sensitive than before, and where metallic fillings are placed in immediate contact with the structural walls of the cavity, there is greater danger from internal shocks to the pulp than there would be ordinarily where there is no cataphoric application made.

I think that with an intermediate non-conducting lining in all cavities treated by this method the danger from the source would be reduced to a minimum. I invariably follow the practice as outlined. I have learned of only one devitalized pulp resulting directly from the electrical current, and that to my mind may have been diseased, and the current or volt of the current indiscriminately used.

There is reported a case of toxemia or toxicosis by Dr. Henry I. Moore, of Frankfort, Germany, during an operation of pulp extirpation and produced toxicosis by a surplus amount of cocain, it however serves to illustrate the power of cocain upon the more delicate tissues, and why not upon the structure of a tooth.

I have been unable to discover any serious after-effects from the use of cataphoresis where the necessary precautions have been observed, as outlined above.

And could we apply the electric current without producing those painful sensations I would think we had reached the mecca in dentistry, therefore, as I have mentioned before, the results thus far attained, while encouraging are doubtless capable of improvement. I use Wheeler's Fractional Volt Selector, with thirty-cell battery and guaiacocain as a medicinal solution.

DISCUSSION.

Dr. Morse: I had a cataphoric apparatus at a very early period of its use in its present condition. I have been troubled with obtaining a desirable current throughout my entire experience, and the result is that I have not had as much service from it as many of you present. I attempted to use a storage battery of ten cells with light plates and for a time they were very successful, but became short-circuited and were soon exhausted. I then attempted to use primary battery cells in connection with a volt selector made for 110-volt circuit and with that I have not had the success I should have had. The success I have had in some cases has been very pleasing and in other cases I have had to spend so much time that I have thought that we were hardly justified in the result gained, considering the time expended unless very well remunerated. Hyper-sensitive dentine is certainly the case indicated for the use of cataphoresis. There are a great many cases, as we all know, where it is not necessary to use an obtundent. In a talk I had with Dr. Custer, at Orand Rapids last year, he related some of his experiences. His theory of the reason why we did not get quicker and better cataphoric action in the use of cocain by the aid of electricity, coincided quite thoroughly with my own observations. The tubuli extend from the pulp in an outward direction and they end in the cavity; uncovered they will be the best conductors of electricity and the electrical current and will carry the medicine that is placed in the cavity through those tubuli to the pulp. The tubuli that extend into the dentine about the cavity, and whose outer ends were covered will not receive and conduct the current in the same manner. The drug will be carried to the pulp through the open tubuli and the pulp will be anæsthetized at the point where the tubuli entered the pulp chamber and it would be necessary to anæsthetize that pulp sufficiently so that the tubuli connected with the pulp and extending through the dentine around the cavity would be anæsthetized before we could make lateral excavations or under-cuts, or drill in that direction. I think this is the reason it requires so long to get anæsthesia in certain cavities, particularly in those portions where we wish to obtain under cuts.

Question: About how long a time does it generally take to obtain anæsthesia?

Dr. Morse.—It varies a great deal. I have had satisfactory results in twelve minutes and even shorter time than that. And again in twenty minutes I have had no satisfactory results; but after the first application by removing the intervening decayed dentine, I think it hastens the operation and I have had better results in making two or three applications, in making partial excavations and then re applying. In regard to being unable to determine the amount of current to be used upon a patient I have not been able to find any method by which this could be done. From my own observations and reading I am led to believe that it is impossible to determine by any outward indication the length of time, the amount of current, or the strength of the solution necessary to produce anæsthesia.

Dr. Blackmarr: I am surprised that Dr. Harvey is not as enthusiastic over this subject as he was last year. In the use of cataphoresis it seems to me it is like everything else we use; it requires judgment and tact. It reminds me of the saying of an eccentric uncle of mine, "It beats all how many times a day you can use good, common sense." The most success I have had was with exposed pulp. I have had success in obtunding decayed dentine and irritable dentine. I have a case in mind, shortly after I got the apparatus, of a young lady who broke off three incisors, exposing the pulps. I applied cocain crystals in solution to have it as strong as possible and in fifteen minutes I had the first pulp removed, perfectly painless. I took the three out in forty-five minutes.

Question: How long do you think it would have taken without cataphoresis?

Dr. Blackmare.—I don't know, but I am sure I could not have done it without the apparatus. She was a very sensitive patient.

Dr. Hall.—I recently saw a patient immediately after the use of the cataphoric appliance on a lower bicuspid, the lip on the inside was black, and a spot on the outside of the cheek looked as though it was pretty well blistered. I would like some of you to tell me the cause.

Dr. Siddall.—How much current was used?

Dr. Hall.—On the first application the negative pole was applied to the cheek underneath the rudder dam. The twelve cells were used and in about twenty minutes the patient said she felt no effect of the current at all. The twelve cells were turned on again and the resistance used. The tooth being still sensitive, the patient felt no inconvenience; then all the resistance was removed and she said there was a sort of tingling sensation on the cheek, not enough so that she felt alarmed, and did not know the effect until after the apparatus was removed.

Dr. Siddall.—think it was the current. I have made experiments upon myself and have never been able to use more than six or seven wet cells and eight dry ones was the limit. I was using the thing to avoid pain.

Dr. Fritz.—I may be a little out of order, but I believe Dr. Blackmarr could have operated on those three pulps in less time with equally good results with a two or three per cent. solution of cocain. I had, about a year ago, a similar experience, not quite so favorable. I don't think I took over fifteen minutes for the operation and it was painless.

Dr. Loeffler.—We want to know the actual result from the application of cataphoresis and so much depends upon the patient. I remember a case that was brought up at our local association by one who has had, in a measure at least, wonderful success with the apparatus. He had made every effort to make a painless operation and after tiring himself out for half the afternoon, and the patient showing no indication of any sensibility, to his utter disgust upon asking him how he liked the operation, the patient replied, "It hurts like the mischief." It seems a great deal of the result we get, depends upon the veracity of the patient.

Dr. Raymond.—I am surprised that Dr. Harvey did not show more enthusiasm in regard to cataphoresis and that he has had so large a percentage of failures. One year ago I commenced using Dr. Custer's apparatus. I have used it quite a good deal since and my percentage of failures has been much less than Dr. Harvey's. I am surprised at Dr. Blackmarr's statement that Dr. Custer said that in five years' time he did not suppose there would be one of his appliances in use. It is different from his statement to me last summer. He said he did not think you could take a case to him he could not be successful with. Dr. Harvey said the minimum amount of voltage was fifteen. It may be so with the Wheeler. I had forty used on a tooth of mine and stood it very well. I use Dr. Custer's and you cannot use more than twenty. You can use forty with success, but I have never gone beyond twenty. I have heard that those using the Wheeler have known their patients to jump a little as though from a break in the current. I don't know the difference in them. I have no doubt but that cataphoresis has came to stay and will be used by careful men who select their patients and know how to use it. If you have an inflamed pulp, it always causes pain as soon as the application is made. You ought, if possible, to cut away the leathery portions of decay, before the application, as that is a non-conductor. Dr. Custer recommends cutting away the enamel so you can send the current through the tubuli, and it will take effect very much more quickly. I have used both cocain and eucain. A saturated solution of cocain has given the most beneficial results.

Dr. Field.—I use a Custer's apparatus with a direct current. I think the current from a battery would be more satisfactory. The first time I ever used cataphoresis, an agent came to the office and wanted me to try cataphoresis. I told him to take it up to the college as I would have a better chance for clinics there. He took it there and set it up. You want sensitive dentine or pulp if you are to be able te show anything. He brought the apparatus up there and I started it on the four per cent. solution. I tried that on one of the students. He said his teeth were extremely sensitive and had one of his teeth filled with gutta-percha. I had that removed. It was extremely sensitive. We used the three per cent. solution for about twenty minutes. We found part of the tooth obtunded and part of it not. I then tried four per cent. solution for thirty minutes and we could then cut as much dentine as we wanted to. I cut close on the pulp and there was no pain whatever, and he had never had any ill-effect from it. I must say that my apparatus has been very satisfactory to me. I am surprised that a man like Prof. Taft will say that in five years' time it will not be used. I think ten will be used where one is now.

Dr. Blackmarr.—That was Dr. Custer's statement to Prof. Taft. Probably a confidential one.

Dr. Harvey.—I think one needs to use a good deal of hypnotism when applying cataphoresis. I think hypnotism has a good deal to do with the result.—*Ohio Dental Journal.*

ARTICLE III.

UNION OF THE AMERICAN AND THE SOUTHERN DENTAL ASSOCIATIONS.

Organization of the National Dental Association.
The American Dental Association adjours *sine die.*
The Southern Dental Association Re-Organizes as The Southern Branch of the National Dental Association, to be known as The Southern Dental Association.

HYGEIA HOTEL,
OLD POINT COMFORT, VIRGINIA,
AUGUST, 1897.

The Southern Dental Association was called to order for its twenty-eighth annual meeting, at 11 a. m., Tuesday, August 3, 1897. The president Dr. William H. Richards, of Knoxville, Tenn., in the chair. The American Denta

Association met at the Chamberlain Hotel at the same hour, the president, Dr. James Truman, Philadelphia; in the chair. Mutual courtesies of invitation, etc., were tendered and formally adopted.

In both associations the report of their respective Committees on Union was made the special order of business for Wednesday afternoon session, at which time Dr. L. G. Noel, chairman of the committee from the Southern Dental Association, read the following report:

Your committee has considered the subject of Union of the Southern Dental Association and the American Dental Association, and beg leave to make the following report:

The Union of the two associations seems to them a desirable object to be attained, and they, in conference with the committee from the other association, have devised a plan, making the following provisions:

First: A new name.

Second: Assuring the membership in the new association of all members of the Southern Dental Association and the American Dental Association.

Third: Providing for the organization of branches in the several divisions of the country, one of which shall be a continuation of the Southern Dental Association in the South, thus preserving in its entirety, this organization to us, this organization which has become so dear to our hearts during all the years of its struggles and success. Its history and autonomy will be thus preserved.

Fourth: The plan contemplates dividing the country into three parts (or divisions) and holding the annual meetings by rotation in the several divisions; thus, in 1898 the meeting will be held in the West, in 1899 in the East.

Fifth: The plan we would suggest also provides for the selection of affairs in like manner, by rotation from the several divisions of the country.

Your committee would respectfully suggest that an early time be fixed for holding a general conference of the members of the two associations, with a view to perfecting a plan of union.

(Signed) L. G. NOEL,
E. P. BEADLES,
GEO. EUBANK,
J. ROLLO KNAPP,
V. E. TURNER.

Printed copies of a proposed constitution for the new organization had been mailed to all the members of the two associations previous to the meetings but numerous alterations and amendments having been subsequently made by the joint committee, Dr. Noel proceeded to read the proposed preamble, constitution, rules of order, order of business, and standing resolutions as amended up to the hour of reading.

At the conclusion of the reading Dr. J. Rollo Knapp, New Orleans, offered a motion to the effect: "It is the sense of this society that the report of this committee be accepted, and that the union be effected."

On motion, Dr. Fillebrown, Boston, chairman of the committee of the American Association, spoke at some length on the many advantages offered by the proposed consolidation of the two associations.

After some discussion Dr. Knapp's motion was put to vote and passed by a decided majority.

On motion of Dr. Cowardin, of Richmond, the same committee was continued to confer with the other committee and fix upon a time for a joint meeting of both associations for the purpose of effecting the union. Similar action was taken in the American Association and a joint session of the two associations was accordingly held in the spacious ball-room of the Hygeia Hotel, at 12.30, on Thursday, Aug. 5.

The meeting was called to order by Dr. Thomas Fillebrown, of Boston, chairman of the joint committee on consolidation.

On motion, a temporary organization was effected by the election of Dr. John B. Rich, of Washington, D. C., one of the oldest practicing dentists in the United States, as temporary chairman. Dr. W. E Walker, of Pass Christian, Miss., was elected secretary *pro tem.*

Dr. George H. Cushing, of Chicago, was selected corresponding secretary *pro tem.*

Dr. Patterson offered the following resolution, which was adopted without discussion :

Resolved: That the members of the American Dental Association and the members of the Southern Dental Association do hereby organize themselves into a body, to be known and styled as "The National Dental Association."

Dr. John S. Marshall offered the following :

Resolved, That the constitution, by-laws and rules of order decided upon and presented by the joint committee of the two bodies be and are hereby adopted as the constitution, by-laws and rules of order of "The National Dental Association." Adopted.

A motion was offered by Dr. Taft that the secretary read the constitution, by-laws and rules of order, in order that the members may better understand it.

The motion was carried and the secretary read the constitution, rules of order, standing resolutions, etc., as adopted.

The next business before the meeting being the election of permanent officers, Drs. Taft and Nobles were appointed tellers and an informal ballot taken.

Drs. J. B. Rich, James McManus, W. W. H. Thackston, Truman, Brophy, Taft, Peirce, Beach, Crouse, B. Holly Smith and H. A. Smith received complimentary votes, Dr. Thomas Fillebrown, Boston, receiving nearly two-thirds of all the votes cast. On motion of Dr. J. Hall Moore, the informal ballot was made formal, and on motion of Dr. Beach, the rules were suspended and the secretary cast the unanimous vote of the National Dental Association for Dr. Thomas Fillebrown as its first presieat. (Great Applause.) The temporary chairman then appointed Dr. James Truman, of Philadelphia, and Dr. W. H. Richards, of Knoxville, Tenn., presidents respectively of the American and Southern Associations to escort the president, Dr. Fillebrown, to the chair.

These gentlemen presented the new president to the convention.

Dr. Fillebrown accepted the honor bestowed upon him in a graceful speech. He said that he had witnessed to-day what he had desired and labored for over twenty years, the organization of a broad national association, and he could say, like the prophet of old, "Now, Lord, let Thy servant depart in peace, for mine eyes have seen Thy consolation." He was heartily applauded.

On motion of Dr. Beach, of Virginia, the convention then adjourned to 4.30 o'clock p. m.

AFTERNOON SESSION.

On motion of Dr. Crawford, by unanimous consent, the office of assistant secretary was created, and made a matter of record.

Dr. Geo. H. Cushing, of Chicago, was elected secretary, and on motion of Dr. C. N. Peirce, he was authorized to cast the ballot for Dr. W. E. Walker, of Pass Christian.

The following officers were then elected :

Vice-President from the Eastern division, Dr. Jas McManus, of Hartford, Conn.

Vice-President from the Western division, Dr. L. L. Dunbar, of San Francisco, Cal.

Vice President from the Southern division, Dr. B. Holly Smith, of Baltimore.

Corresponding Secretary, Mrs. Emma Eames Chase, of St. Louis.

Treasurer, Dr. Henry W. Morgan, of Nashville, Tenn.

Executive Committee.—The chair announced that the executive committee was composed of nine members, three of whom are elected at their first election for three years, three for two years and three for one year, and that one of each three must be selected from each division. Before the convention proceeded to an election, Dr. E. P. Beadles offered the following :

Resolved, That the president cast the ballot for the executive committee for members of the association best suited for the position.

The resolution was adopted.

The president subsequently announced the following as the names of the committee :

To serve three years—Dr. J. D. Noel, Dr. J. N. Crouse, Dr. V. H. Jackson.

To serve two years—Dr. M. F. Finley, Dr. J. D. Patterson, Dr. H. A. Smith.

To serve one year—Dr. Geo. Eubank, Dr. G. V. I. Brown, Dr. C. N. Peirce.

Dr. John S. Marshall offered a resolution that the treasurers of the American and of the Southern Dental Association furnish the treasurer of the National Dental Association with the names of all the members of the associations in good standing at the time of adjournment, and that he be directed to add their names to the constitution as permanent members and that this act be as legal and binding as if the signatures had been affixed by the individuals themselves.

The motion was adopted.

Omaha, Minneapolis and Denver were put in nomination as the next place of meeting of the convention. A ballot was taken and Omaha receiving the majority of the votes cast was announced as the next place of meeting of the association.

On motion of Dr. John S. Marshall, the president was requested to appoint a committee of three to take under consideration the establishment of a journal for publishing the annual proceedings of the convention, with other original matter pertaining to surgery and the collateral sciences, and to report at the next meeting.

The following offered by Dr. Crawford was adopted :

Resolved, That it is the sense of the National Dental Association that any member of the dental profession in good standing presenting a certificate of registration from any State in the Union, that the same should be admitted to registration in any other State of the Union, when presenting such certificates of registration and good standing professionally, without an additional examination.

On motion, the president was instructed to have a sufficient number of corrected copies of the constitution and by-laws printed for the use of the members of the association.

To meet this and other expenses of the National Association, who has an empty treasury, the dues of present members having been paid to the American and the Southern Associations respectively; the treasurers of the two associations were attributed to turn over to the treasurer of the National Association one dollar for each member in good standing.

On motion of Dr. R. Finley Hunt, the president was authorized to appoint a committee looking to the preparation of a history of the dental profession in the United States.

Dr. Crouse offered a resolution to the effect that any member of the dental profession who has been a reputable practitioner for fifty years may be elected a permanent member of the National Dental Association without payment of dues.

This was unanimously adopted.

On motion of Dr. M. F. Finley, a motion in the interests of public health was adopted looking to the employment by the army medical museum and library of a dentist to be selected for his eminent ability and fitness, whose time shall be wholly devoted to the advancement of dental science.

On motion, a committee of three—Drs. Taft, Crawford and McManus—was appointed to confer with state and local societies to aid in the formation of new societies, etc.

On motion, it was resolved, that the proceedings of the present meeting of the National Dental Association be attached as supplementary to the proceedings of both the American and the Southern Dental Association and incorporated in their published reports.

On motion of Dr. Richards, the two associations were requested to deposit their gavels in the Army Medical Museum at Washington.

A motion by Dr. J. Y. Crawford, that the name of the new organization be changed to that of "The American Association of Dental Surgeons," caused an animated debate and brought out the suggestion of other names—Association of Stomatologists; Association for the advancement of Dental Science, etc., etc. There being objections made to all the proposed changes they were laid over for consideration at the next annual meeting, and the association adjourned to meet at Omaha in 1898.—MRS. J. M. WALKER for *Ohio Dental Journal.*

ARTICLE IV.

TREATMENT OF PULPLESS TEETH.

BY A. J. HUSBAND, L. D. S., TORONTO.

Read before Toronto Dental Society, May 12th, 1897.

For convenience of description, we will divide pulpless teeth into those presenting with pulps recently dentalized by medication; second, with putrescent pulps; third, with acute alveolar abscess without fistula; fourth, with fistulous opening; and fifth, preparatory to inserting pin crowns.

In the first case we will suppose the pulp devitalized but not removed. Adjust the rubber dam after cutting away the decalcified dentine, make a free opening into the pulp chamber, not hesitating to sacrifice good tooth substance in order to secure light and thoroughness of manipulation. Endeavor to remove the pulp by inserting a barbed brooch well up the root, twisting and withdrawing it with very often the pulp attached. In refractory cases I find that with the Evans' root-drier inserted hot the pulp will adhere to it and come away easily. Having the pulp removed, check the hæmorrhage, if any, by injecting into the canals pyrozone; for this purpose use the minim syringe. Whether there is any bleeding or not, I wash out with pyrozone, followed by sodium-peroxide, this last for the purpose of saponifying any remains which may be left; wash this out with applications of water and dry thoroughly with Evans' drier or hot air or both. Wipe out the roots with oil of cinnamon on a fine brooch, fill with chlora-percha cones to displace surplus liquid. In this class of teeth I deem immediate filling the best.

Second: Putrescent pulps. Secure all the cleanliness possible by removing softened dentine and washing out the cavity well with tepid water before adjusting the dam. After the dam is applied swab out the cavity with pyrozone and evaporate moisture with hot air, secure free opening into canals, reaming them out if the margins are soft; wash out thoroughly with repeated applications of pyrozone. In washing the canals with H2O great care must be exercised not to use too much at a time. I use the minim syringe and inject a very small drop at a time, wiping out and applying repeatedly until effervesence ceases, followed by sodium-peroxide; wipe out canals with cotton wound round a fine brooch until all discoloration ceases. Again use hot air or Evan's drier, followed by an application of oil of cinnamon, and fill as in the previous case.

If it is impossible to check the discharge I fill the root with cotton saturated with pyrozone and mercury bichloride 1 in 1,000 equal parts and renew every 2 or 3 days until discharges cease.

Third: Acute alveolar abscess without fistula. These cases usually present with swollen faces and extreme soreness of the teeth. My first treatment is simply to secure an opening into the pulp chamber. I dismiss the patient then until soreness disappears, when I can operate comfortably for both of us. I know there is a great outcry against this procedure, but I follow it nevertheless, deeming the treatment equally efficacious and considerably more human than any other that I know. After soreness has disappeared I treat as in former cases.

Fourth: Cases with fistulous opening are treated by opening fully into canals and cleaning them as well as can be with brooches and then forcing pyrozone through the fistula with a hypodermic syringe, using a washer of gutta-percha to dam up the canal to prevent return of liquid. This is followed by aromatic-sulphuric acid injected in the same manner and the roots dried and filled once with chloro-percha and gutta-percha points as formerly. In some cases where it is deemed expedient to open into the canal from the tooth, I follow the track of the fistula with bars, scrape the end of the root, or as I think better still, extract and replant.

Fifth: Before inserting pins for any purpose after treating the root as in the former case I fill the apex with tin to prevent cement from being crowded through.—*Daminion Dental Journal.*

ARTICLE V.

RESECTION AND REPRODUCTION OF THE MAXILLÆ.

BY G. LENOX CURTIS, M. D., NEW YORK.

Formerly Professor of Oral and Facial Surgery, New York Dental School and Instructor in the New York Post Graduate Medical School and Hospital.

Read before the American Medical Association at Philadelphia, June, 1897.

The purpose of this paper is to show the profession the importance of special study and instruction in oral and facial disease, and that these are worthy of the same consideration as is given to any of the fully recognized specialities in medicine. Until they do appear in the curriculum of the medical school, the faculty will not have done its duty toward the student. The field covered by the general surgeon is altogether too great for a careful consideration of any part where such minuteness is required to save and assist nature in doing her work. The surgeon most capable of successful teaching in this line, is he who has been a thorough and conservative dentist.

Like produces like; this applies to every department in nature. The periosteum, under favorable conditions, will reproduce the substance it covered. That of the ramus of the jaw will only make the thin lamina of bone which nature has originally placed there, while that of the malar and the body of the jaw reproduces a dense structure differing materially in texture.

If the function of a part be permanently lost, reproduction is not a necessity, nature supplying only that part which is required. If the teeth have been extracted with a view to remaining out, the portion of the jaw which is required to nourish them is not reproduced, but where the teeth are replaced and retained, all, or sufficient, of the bone is reproduced and reattaches them to the jaw. Such I have seen in active use for years.

The only condition I can ascribe for the removal of the periosteum is where it is attacked by disease, such as cancer, and the entire structure destroyed. When the bone alone is destroyed, as in necrosis, cystic tumors, or from pressure by resistance of a growth, as tumor of the antrum, I see not the slightest necessity for removing this natural sheath, but on the contrary every reason for retaining it. I have seen Billroth, Von Borgmann, Agnew, Ashhurst, Garretson, and other great surgeons resect the jaw, but they invariably employed Hapfelder's Ferguson's or Landenbeck's method, except in necrosis where but small sections were involved. Liston, Tait, Barton, Mutter and Cross also followed on these lines. But what can we say for the subject? Partially or wholly jawless, maimed and disfigured for life, a repulsive and pitiable object to others and a shrinking annoyance to himself. Is it not time to call a halt and look this matter squarely in the face?

I do not censure the surgeon whose opportunities to acquire knowledge have been dwarfed by the oversight of his teachers.

My method to obtain the best results in the preservation of the contour of the jaw, is by retaining the necrosed bone in position until the periosteum has been so strengthened by the reproduction as to allow nature's outlines to be maintained, employing it as an inter-osseous splint. Where it is necessary to remove the bone, I retain the contour of the face by gauze packing and change from time to time until the bone is sufficiently reproduced to resume its shape. This requires frequent dressing so that the amount of pus may be kept at the minimum. The teeth are retained in position by means of inter-dental splints or ligatures. Where the teeth are lost, I place other teeth in the opening when the wound is nearly closed, maintaining them by artificial support and allowing the bone to form around them. Where the destruction of the bone has been great and the periosteum too weak to retain the jaw in position during the process of reproduction, I use an inter-dental splint (as employed by Listôn over fifty years ago) in which the upper and lower teeth properly occlude. By hastening slowly, the danger of wounding the dental nerve is materially lessened.

I was once asked to assist a general surgeon to remove one-half of the inferior maxilla, he disclaiming it to be Sarcomotis. I saw nothing but an enlargement of the sub-maxillary gland due to the septic influence of a tooth-pulp. I labored with him to save the man's jaw and show the error he was falling into. He defiantly replied "I have said that it is a cancer of the jaw and must be taken out, and I am going to do it." And so indeed he did, thus maintaining his wisdom with the patient.

The bone he removed was as perfect as nature made it. This is but one of the many terrible examples of what results from retaining old methods.

Scarce can we read a text-book in which is not found methods on treatment of facial diseases in vogue half a century ago.

In 1886 I operated on a young woman, aged 23, with the following history. Four years previous, after suffering much pain in the face, which was swollen, a fistula appeared in the lower jaw which was diagnosed as being from an abscessed tooth. The gums around the tooth were swollen and inflamed, the molars and second bicuspid were extracted and pus continued to flow. Her health rapidly diminished, menses ceased, and had not returned although constantly under medical and surgical treatment.

Examination revealed the emaciated condition of the patient. She was suffering from blood poisoning, was highly nervous and hysterical, had no desire for food and had lost the sympathy of her doctors and family. In the left inferior maxilla where the tooth had been extracted, there were granulations. A boggy condition of the mucous membrane extended all along that side of the jaw. Over the ramus it was particularly inflamed. The probe readily passed beneath the periosteum and far up along the ramus. The patient was then too sick for an operation with a view to best results. The wound was cleansed daily to lessen the amount of pus, and for one month the patient was placed under most rigid restorative treatment with good results. I found that under the local stimulating treatment, bone had been sufficiently reproduced to strengthen the periosteum so that when I removed the dead jaw the contour was preserved. The cause of the trouble I found to be a wisdom tooth lying transversely at the neck of the jaw immediately under the condyle. This along with the granulations and debris was removed. The wound was packed continually until healthy granulations filled in the periosteum; the jaw, minus the teeth, was reproduced with all its usefulness. Complete restoration to health and a gain of twenty pounds in weight followed this work. The nerves and vessels in the jaw were not injured and no paralysis resulted.

Before my class at the New York Post Graduate Medical School and Hospital on March 25, 1893, I operated on a lad fifteen years of age who gave the following history:

Three years before, while at play he ran against a lamp post, striking the left side of his face and bruising it severely. A year later there appeared on the face, over the molar bone, a hard lump which continued to increase until it was the size of a hen's egg, preventing the boy from seeing with that eye objects on the ground near by, without bending his head. He had not realized any special pain or discomfort from the tumor. Thinking the trouble arose from the abscessed teeth, his dentist extracted the upper left first bicuspid, which showed no evidence of being diseased. I diagnosed an osseous tumor of the antrum, and found that the malar and superior maxillary bones were completely destroyed by the direct pressure against them, only the periosteum remaining. Not only was the tumor directed outward, but downward, depressing the roof of the mouth and extending beyond the alveolar process against the buccinator muscle. An incision was made through the periosteum encircling the teeth, as seen in the specimen here presented, in which the tumor and teeth are attached, and it will be noticed that only a small part of the alveolar process remained intact. This with the teeth was removed, the entire side of the face falling into the cavity made by their absence, so completely was the malar and the superior maxillary bones destroyed. The inferior orbital ridge and zygoma only resisting the pressure of the tumor. A profuse hemorrhage followed its removal, but was readily checked by hot water. The wound was packed with aristol and gauze, and the contour of the face secured. The periosteum united with antures. Through this opening the wound was dressed until the shape of the face was permanently restored. Time of operation twenty-five minutes.

The following day there was considerable œdema which readily subsided. From day to day the dressing was changed until the periosteum could support itself, and in two weeks the case was dismissed from the hospital The antrum was douched daily until restoration was complete. An artificial denture was made to replace those lost, to give the normal fullness to the mouth. In this operation there was no external wound, consequently no necessity for ligature and no scarring of the face which would necessarily follow had the operation been done on the lines drawn in general surgery. The wound completely healed in six weeks with no deformity of the face. I have seen the case from time to time and in every way it is eminently satisfactory.

On Feb. 3, '93, I operated on a gentleman 73 years of age who, up to the year prior to then, was in robust health never needing a physician in forty years. He stated that he applied to a dentist to have the left superior wisdom tooth, which was loose, removed, it having elongated, owing to the loss of its antagonist. As the dentist was using the forceps, the patient noticed they were covered with blood, but before he could rebel against this outrage, a tooth had been extracted, which was found firmly attached and resistent. He saw that a sound and healthy tooth had been taken out by mistake. The dentist then removed the loose tooth with slight inconvenience. The wound made by the extraction of the teeth did not heal, and the gums around it became swollen and inflamed, the remaining teech on that side soon were loose and sore. In three weeks they were so troublesome that with his fingers he removed the first molar. He then noticed an opening into the antrum and that granulations protruded.

About two months after, the bicuspid was extracted in a similar manner, and in two weeks later the cuspid. The entire side of the jaw became very painful; the patient was unable to sleep or take proper nourishment and rapidly diminished in strength and health, until at this time, Feb. 3, he was extremely emaciated, not having taken solid food for weeks and for the past three days only water, because of the great pain in the effort to swallow.

Examination revealed a deplorable condition of affairs; the entire left half of the jaw and cheek were infiltrated. The microscope showed epithelioma. The characteristic cancerous odor prevailed. An incision was made anterior to the right cuspid and extended back and across the soft palate to the condyle, down the ramus, and forward along the buccal surface of the jaw to cuspid upward and forward, until all the mucous membrane to the median line was removed. The entire enclosed area was then resected, leaving only the external portion of the malar bone and the orbital ridge of the superior maxillary in position. In operating, I removed a portion of the anterior lobe of the parotid gland, along with the duct. The hemorrhage was profuse, but was completely checked in a minute by hot water. The wound was dried, packed with aristol and gauze, no ligatures being employed. Time of operation, twenty minutes. The patient made a splendid recovery, slept comfortably much of that night and had but slight rise of temperature. There was some œdema of the face which lasted three days, Patient received most nourishing diet and was sitting up in three days. On the seventh day following the operation, the case was for the first time dressed, no untoward symptoms arising in the meantime. The packing was perfectly dried and scarcely blood-stained; not a drop of pus was present. The wound was repacked, but loosely, and redressed every third day without a single complication. On Feb. 17th, patient was dismissed from the hospital with instruction to douche the wound frequently. The wound made rapid progress in healing, and on the thirteenth day of March, it had almost completely closed, leaving but a single opening into the antrum, so that on the 30th day of March the impression for an artificial denture was taken.

The patient's health had wonderfully improved, he being free from pain and slept soundly. He was able to resume the management of his affairs and was again in good health, continuing so until August, '94, when he contracted pneumonia from which he died. Two months prior to his death, the cancerous granulations appeared in the old wound. There was no disfigurement of the face from the operation, and the only inconvenience was the loss of his natural teeth, as he was unable to wear the artificial substitute.

A lad 13 years of age was brought to me in March, 1893. Giving a history of complete nasal stenosis of some years' standing. a clear history of adenoids. He had been under medical care for years, the physicians failing to recognize the cause of his trouble. The discharge of pus from the mouth and nose caused the physician to refer the patient to a general surgeon, who in turn referred the case to me, with the statement to the parents that he believed the preservation of the jaws was preferable to their removal which would result in a hideous disfigurement from an operation at his hands. I have never operated on a more lifeless and waxy looking creature. The odor from his breath and body, which was steeped in pus, was most sickening. There was no time to lose. Desperate chances had to be taken to save his life. All of the upper oral and bicuspid teeth were so loose that but for the periosteal attachment they would have dropped out. There were large sinuses under the lips and the roof of the mouth through which pus exuded. The periosteum of the roof of the mouth was so filled with pus that it bagged. All of the bone of the superior maxillæ, anterior to the first molar including the palatal plate was necrosed, likewise the palatal bones and the inferior turbinates. The adenoids completely filled the nares and crowded into the antrum of Highmore, breaking down the walls, and advanced until the process of destruction was complete.

Pus oozed from all the loose teeth and through the sinuses, nose, mouth and out up through the lachrymal ducts into the eyes. The throat was so plugged up that breathing was very difficult and ptyglism extreme. At this operation I removed what I could of the adenoids, opening the nasal passage and partially cleaning the antrums, which was done with great difficulty; as the boy took chloroform badly, owing to extreme anæmia; the loss of blood was not so very great.

The loose teeth were supported by ligatures until held by the new bone.

The patient made very good recovery from the operation, and in forty-eight hours the improvement was noticeable. The wounds were dressed daily and through the sinuses douched every hour. Recovery was so rapid that in four weeks I was again able to operate, this time removing all of the necrosed bone and thoroughly curetting the antrums.

The boy made rapid strides toward recovery, and by May 1st I was able to perform the final operation, when I removed the remaining adenoids. Here occurred a profuse hemorrhage, but with per-oxide and hot water it was quickly checked. Most stimulating tonics and nourishing diet were prescribed from this on. Recovery was marvellous, so that in two weeks the patient was able to walk to my office for treatment. By June 1st, he was dismissed cured, having gained 40 lbs. in weight, having regained his normal color, good appetite and usual strength. He then went to his country home. I saw him again in one year. There was no occasion for treatment, with the exception of a slight imperfection in the alveolar process, where there had been a deep sinus, the gums did not unite and a few adenoids had put in an appearance. The only additional opening through which I operated, was made where I extracted the left superior molar, this being so badly diseased I considered it well out, and through which I was better able to reach the antrum.

To facilitate cleansing of the wound and destruction of the pus, let me recommend to you Electrozone, the best of all agents I have found for this purpose. Under its use the pus melts away like the dew before the morning sun.

I have done many cases similar to these stated and without deformity in any instance. All of them are accompanied by blood-poisoning and have usually been treated for rheumatism, malaria and typhoid fever for months and even years, before the error is discovered.

The conservative method is not conducive to a fine collection of pathological specimens, as a recovery of a part without blemish leaves only the history of the case and the statement of the patient as proof of the malady.

The student should have a chance to see in practice the methods he wishes to adopt. In this city, only recently at our great University no end of strife resulted from a deterimined and successful effort of the dental department to make a place in the hospital for their oral surgeon, with equal right to operate. This was the beginning of the end when all such institutions must of necessity adopt the same course. Why confine this work to so-called major operations when they can be simplified to the minor class by annexing such men skilled in dentistry and medicine alike to the medical faculty?

Let us hope that the controllers of such faculties will appreciate that "Knowledge is power," and that new methods are a necessity.—*Dominion Dental Journal.*

ARTICLE VI.

POINT OF CONTACT.

BY R. W. MORSE, D. D. S., LANSING, MICH.

Read before the Michigan State Dental Society, June, 1897.

The normal set of teeth in the mouth of a human adult offers sixty points of contact which represents about three-fifths of the probable points at which caries attacks the teeth. Why is it that the teeth decay more at this point than others? It is due to the fact that at this point and just away from it toward the cervical margin, the surface is not self-cleansing, and there becomes attached to the teeth a thin film of agglutinated substance, made up principally of micro-organisms. The food in process of mastication does not disturb them. The brush passes over the buccal and lingual surfaces, and still they remain. The tooth-pick will dislodge some, but it is necessary to use dental floss, or something of that nature to polish and scour them off. If all surfaces of the teeth were kept cleaned of this accumulation, we would soon find that our profession was considerably crowded, but the laity have not been sufficiently drilled on this method, and those who have been instructed do not find the time to do it thoroughly, hence we are called upon to correct the results of their defiance of Providence. This agglutinated mass of organisms secrets acids; at first attacks the cement that binds the enamel rods together, on account of its not being as dense as the enamel rods. Then the rods themselves are decalcified, and gradually disintegrated, leaving an opening into the surface. In such openings as fast as found the microbes establish themselves, and from now on have it all their own way unless the cavities are scientifically stopped by some member of our profession. It is our duty to our patients to instruct them in the use of dental floss and brush to thoroughly cleanse the teeth. Abrasion is the only means by which this can safely be accomplished, and then it is necessary that it should be attended to religiously. Mouth-washes aid in making the microbes uncomfortable but do not remove them. Careful brushing and the use of dental floss in connection with mouth-washes is the best method of attack.

But the thing that I wish to call attention to particularly is the restoration of this point of contact by filling. Dr. Black in his talk before the Chicago society, in February, tells of the new method of cutting away the proximal aspects of the molars and bicuspids that are affected by caries, and replacing with large metallic surfaces properly shaped to control the proximal space, and thus offering a roost for the microbes that they cannot destroy with their acids. I quite agree with the doctor in the main, on the counts he has made. In the case of considerable destruction of the enamel and dentine at this point, but I feel that there is a class of cavities that can be treated in a less heroic manner with good results. The moderate and small-sized cavities around which the enamel is not affected would be of this type. Take two moderate sized proximal cavities as an example in teeth of normal shape and position. At first examination if time permits place between these teeth a pellet of cotton saturated with chloro percha. This is repeated at intervals of three or four days, increasing the size of the pellet until the space is sufficiently large to permit of *thorough* preparation of cavities and of filling and finishing the fillings, and when the teeth resume their natural position the oval surfaces of the fillings should come in contact, and at no point should the enamel on either tooth touch the opposing filling or tooth. The point of contact should be as near the occlusal surface as consistent with the case. Treated in this manner, the margins of the enamel are as self-cleansing as under the best conditions that nature provides and gives the gums in the proximal space good protection. Dr. Miller and Dr. Black have for some time maintained that the fluids of the mouth were responsible for carious teeth, only as they aided or opposed the growth of organism. Dr. Williams has demonstrated this to be the fact, and accounts in this way for predisposition to decay, whether the teeth are what are known as hard or soft teeth. In cases of marked predisposition it is probably necessary to apply the method Dr. Black advocates. With incisive teeth we see many cases of recurrence of decay at the cervical and at the incisive margin of cavities, that were well prepared and carefully filled, but when they resumed their natural position the point of contact was at either of the margins of the enamel rather than the filling. This result probably was due to not having sufficient space by separating to contour the filling sufficiently to allow of their being finished, and still have the contour project beyond the margins and act as a buffer to hold the enamel apart, so that they may be cleansed and cleanse themselves to a degree.

I wish to appeal from the decision and practice, of some good men in the profession that the use of the matrix, is in opposition to these results unless an extreme amount of separation has been procured, while the making and the placing of the filling is a little easier. The completed filling does not often meet the requirement of the restoration of the original tooth.

In crown work where the space is contracted, there is a liability to having straight surfaces in contact, that it is desirable to avoid. Separating will often correct this condition so that cleansing spaces will remain and the gum septum be restored.

In conclusion I wish to appeal to the dental profession to be more thorough in separating teeth to be filled, no matter what filling material is to be used. Make the point of contact of a shape that would best protect the proximal space from the encroachment of food. Have the fillings rest against each other holding the enamel apart from touching adjoining tooth or fillings. This metallic point of contact acts as a protection to the tooth from redecay as a sled runner is protected from wear by the iron shoe fastened upon it.—*Ohio Dental Journal.*

ARTICLE VII.

CATAPHORESIS.

BY DR. C. L. HUNGERFORD.

Read before Kansas State Dental Association.

I have had some little experience with cataphoresis. It has been fairly satisfactory, from the fact that I have only used it in a certain character of cases. I have found it is extremely satisfactory in those cases where you can bring your electrodes in direct contact with the soft tissues. In other words, it is a method of driving cocaine or any other anesthetic into the tissues very much more rapidly than the normal physiological process of absorption would take it in. If you apply cocaine to the mucous membrane, you find its anesthetic effect is wholly superficial, just upon the bare tissue; by aid of the electric current, which mechanically carries forward the drug, it is driven deeply into the body of the tissue, thereby anesthetizing it. I find cataphoresis is very satisfactory in obtunding the gum where you desire to lance an alveolar abscess in cases where a tooth has been extracted and the remaining socket is very painful to the touch and does not heal readily; and if you have an exposed pulp, you can apply your cataphoresis to that pulp and obtund it in a very short time. For the preparation of sensitive cavities, in obtunding sensitive dentine, I have found that it is very slow and somewhat uncertain.

I myself have been using a storage battery. I have tried the dry cells and I have tried the ordinary street circuit. I find there is very little difference in the effect from either the cell, storage battery, or the street circuit. I think the storage battery is the most satisfactory, the cell battery comes next, and the street circuit is the least satisfactory. I use the street circuit because it is so much more convenient. It is always ready at hand for me, and I have no batteries to keep in order and requiring attention. To those few who live where they can not have the advantages of the street 110-volt circuit, as we call it, then a storage battery can be used, if you have a convenient place to send it to be recharged, and if not, you will be compelled to use the ordinary cell battery.

In using the street circuit, as I use it now, I adopt a method which obviates a serious objection to the 110-voolt current. The mains come in the office here, and I have those run through a rheostat made of coils connected with the main. This is, of course, cut in or cut out, whenever I wish to use it. When I cut that in, the entire current coming to my office forms what is called a short circuit, so that in case the wires become crossed with the arc light system, or in case of a thunderstorm or any accident which may occur to the main circuit, the current will be made to pass through that rheostat, which is not connected at all with the patient. Electricity is very much like a stream of water passing through a pipe; if you put a little hole in the pipe and take a stream off from the pipe in that way, no matter how much pressure there may be upon the large main, it will only increase the pressure or volume of water at the hole to a very slight extent. If I have my patient over here [illustrating on blackboard], I have what I call a "shunt-circuit." I connect my patient with two wires; one of them is immovably fast here, and the other one is capable of passing along a slide, so that I can run in more or less of what we call a shunt, giving more or less current. Then the current passes through the rheostat, it passes through this shunt, through the patient and back to the main circuit, so the dangers from the use of the street circuit are almost entirely done away with.

Then we almost always have little fuse-blocks fastened in the main circuit or fastened in the rheostat, so that they will burn down very rapidly in case any extra amount of current should come across the wire.

Now, that is the current I have been using almost exclusively for cataphoresis. There is one main objection to the ordinary incandescent circuit, and that is because it is irregular. The current as it comes across these wires, instead of being a straight line, as I have marked it here, is rather a zigzag line; in other words, what we call the voltage is rising and lowering all the time on account of the slipping of the belt and slowing down of the dynamo or from the lack of force in the steam engine to drive the dynamo with the requisite speed. Lights, instead of burning with what they call 110-volt pressure, are ordinarily burning with from 90 to 105 or 115 volts. You very rarely find the voltage in a building on a circuit run up to the requisite standard. If it is a private plant, located in a building, the proprietor learns that the life of the lamps is very much lengthened by running with a lower pressure. If the dynamo is run at a very much higher speed, the lamps become very much more incandescent, but will burn out very much more rapidly, so they scarcely ever run them up to the requisite standard; and even then the voltage is irregular, and irregularity in the current is productive of pain to the patient when used in cataphoresis.

The current which comes from a storage battery or primary battery is very much more steady, and thus is much less productive of pain than the street circuit, but the latter, if used with ordinary care, is not apt to produce much pain.

In using a storage battery, it takes about 20 cells. We find we generally get about 2 volts to each cell of the storage battery, and generally 1 to 2 amperes. I have a battery which gives 2½ amperes to each cell and 2½ volts. That is scarcely sufficient to perform cataphoresis unless you can have a complete exposure of the soft tissues. You need 30 to 50 or 60 cells, really, to get the best effects, because you have to get enough pressure to force the current entirely through the body, and if you are supplying it to a very dense tooth, you have an enormous amount of resistance. The resistance is stated to be 50,000 or 60,000 ohms in a tooth. If this is the case, you are going to have such a minimum amount of electricity forced through that tooth that there is no cataphoretic effect obtained at all from the application of the drug, or not enough to be appreciated. You have to have enough current to send through there to produce the effect. It is not pressure that produces the desired effect, it is the quantity of electricity; but you must have sufficient pressure behind it to force it through.

Now, in applying it to a tooth where there is very sensitive dentine and a small cavity, you have to drive it through so much of the body of the tooth-structure that it takes anywhere from 15 minutes to three-quarters of an hour before the cocaine is really carried into the body of the tooth. Therefore, I have discarded cataphoresis in the preparation of sensitive cavities. I have a better, surer and more rapid method.

Now, as I said last night, just as sure as there comes before the profession a method of completely anesthetizing pulps of teeth, dentists are going to get into trouble. They are going to be careless in their manipulations and the pulps of teeth are going to be exposed without either themselves or the patients knowing it, and they are going to pack amalgam or gold fillings into those cavities and the death of the pulp will ensue.

It has been the experience of a great many operators that the pulps of teeth have become dead from the use of cataphoresis; not because of any detrimental effect from the application of the current, not because of any disease, or because of any irritating effect from the cocaine, but simply because the tooth had been so thoroughly anesthetized that the operator has cut right into the body of the pulp, or has approached so nearly to it that it will be made to die from thermal changes, or from irritation from the metal or whatever filling may have been introduced after the cavity was prepared. It is not the electricity, not the cocaine, but simply because, not being warned by the extreme sensitiveness of the cavity as you approach the pulp, you will cut too close to the body of the pulp, and later on you will find it diseased.

Therefore, if operators will use any means of producing anesthesia that is really effective, they must understand the technique of tooth-structure, and be thoroughly familiar with the anatomy and the position of the pulp, and then the most extraordinary caution must be used, because you have nothing to warn you when you are cutting into that pulp. And very frequently we find irregular pulp-chambers, and find some pulps extending up into the little cusps, and are likely to expose one of these and have an abscessed tooth at the end of a few weeks or a month.

Now, as to the nerves and tissues. Everybody knows cocaine will benumb the nervous tissue whenever it comes in contact with it. The cataphoretic effect of the electric current is simply the mechanical forcing of cocaine into the tissues that would not so readily absorb it without it. If I were to attempt to drive a nail into this table by simply laying it point down on the table or pressing on it with my hand, it would take a very long time, and probably never would stick in, but take a hammer and you can force it in very quickly, and that is all the electric current does in cataphoresis. The electric current has nothing to do with the anesthesia. It is not sufficient to produce any irritation to amount to anything. It has been taken by people the world over thousands and thousands of times into the body—as strong a current as we employ for cataphoresis, and has never done any harm. It is not destructive of tissue, and does not produce irritation to any extent. It is employed many times in strong currents for a cautery—for its heating effect.

The only kind of current we can use for cataphoresis is one which goes simply in one direction. If it passes in one direction and then quickly comes back, constituting what we call an alternating current, it drives the cocain in, and when it comes back it drives it out again. Therefore the alternating current is of no service. There is a current known as the Farady current—that is an induced current which is given off from winding a coil of wire around a magnet, forming a little primary battery. That current is not strong enough to produce electrolysis; it is coming in such an infinitesimally small amount, there is really no carrying in of the substance.

The current employed in cataphoresis is very much like a cyclone passing along a tract of country; anything that lies in the path of that cyclone will be moved and carried forward. Anything that lies in the path of this current is carried along with the current mechanically by the mere force of the current, and carried on in a circular, spiral-like motion into the tissues and along the path of the conductor.

Now I have tried it where I have had exposed pulps, and found I could anesthetize that tooth in from 3 to 5 minutes by the cataphoresis ordinarily very satisfactorily, so I could remove the pulp of the teeth entirely; or perhaps I would make a second application in 3, 4 or 5 minutes after, and remove the contents of the pulp-chamber without causing any pain. I have bad very excellent results in applying it to cavities where a tooth has been extracted, using a small pledget of cotton and leaving it in there for 3, 4 or 5 minutes.

I have had very unsatisfactory results with it in applying it to a tooth that was very sensitive, where there was sensitive dentine around the neck of the tooth, where there was a very small, shallow, saucer-shaped cavity and a large body of the tooth-structure to penetrate. The tooth-substance is such an extremely bad conductor it takes the current a long time to work its way through the dentine, and needs a greater amount of current and a greater length of time.

I find great use for it; perhaps on an average of once a week in my office I have occasion to use my outfit. I could not use it any more for obtunding sensitive dentine, though I do not believe that any detrimental or dangerous effects follow.

It might be worth while to follow this by enquiring what kind of solution is the best to use. What is known as a solution that offers absolutely no opposition to the current—in other words, a solution that is a perfect conductor—is the one that is not going to produce any very great effect. You are going to have the current pass readily through that drug, and the result may be that none of the cocaine will be carried in, or only a very small amount. The idea of carrying cocaine into the tissues is based on the principle that there is an obstruction to the current at the point of application, and the greater that obstruction is the more intense will be the effect, and the more deeply will the cocaine be carried into the tissues, but it will not be carried in provided it is a perfectly good conductor of the current. Distilled water is known to be a good non-conductor, and therefore we add it to the cocaine salt (or possibly some other salt) to render it more of a non-conductor. Then guaiacol, or guaio cocaine, as it is called, is much recommended. Guaiacol is simply a preparation of creosote. It is somewhat of a local anesthetic, and a solvent for cocaine, and it is a very poor conductor of the electric current. Therefore cocaine dissolved in guaiacol makes a very excellent application for the purpose of carrying cocaine into the tissues by the electric current.

Ordinary water I find just about as satisfactory, although I find that it varies some as a non-conductor of electricity.

I do not care to go into the subject of electricity, or further into the subject of appliances. Those who live in the city can have an electrician fix them up a rheostat where they can have a little shunt they can take off, and they will find that as satisfactory as anything. Those who have not this current available can get a battery, have it enclosed in a glass case, with a little milliampere meter, or something to show the direction of the current. They are really the most satisfactory for those living outside of the larger cities where they have not the use of a main circuit.

I believe that simply cocaine dissolved in water is just as good an application as any of the others that we can employ. I believe that the danger of its application is not from the cocaine itself or from the current, but it is in the following manipulation after the tooth-structure has been thoroughly and completely anesthetized.

As to the conductor to be used in applying the cocaine, you should employ for your electrodes some kind of metal that is not going to be disintegrated by the electric current. If I use a copper wire to convey the salt, I find there is an electrolysis of that wire. In fact, the electric current can not pass through any substance without producing an electrolitic action, the effect of which is a molecular change of the structure of that body, no matter whether it is a copper wire, or human tissue, or water. If I use a copper wire on my positive pole, the current passing from the positive to the negative, I will find the salts of copper will be driven into that tooth-substance, and the result is the tooth will turn green. The only electrodes which are permissible to use are platinum, in which metal there is no apparent decomposition of the metallic substance of which they are composed. There is simply electrolysis of the liquid itself, or, if any takes place in the metal, it is so infinitesimal that it is not appreciated.

Instead of placing the patients upon the negative electrode, or allowing them to hold it in their hands, I generally give them a sponge to hold against the side of the face, so that instead of passing the electric current through the entire body, I pass it through a small amount of tissue; the patients holding the moistened sponge under the jaw, then applying the positive pole saturated with the water and cocaine into the cavity, direct, or on the inflamed gum where I expect to make an incision. This must be done with the positive pole, as the current passes from the positive to the negative. If you apply the cocaine on the negative pole, you would have absolutely no result—if any thing, the effect would be irritating. It is a well-established fact that the positive pole is hemostatic and will stop the flow of blood; it has a quieting effect, while the negative pole is an irritant and produces increased bleeding in a wound. Whenever you want irritation, you apply the negative pole; whenever a sedative effect is sought, you use the positive pole. So that, in my opinion, there may be some slight sedative effect produced from the application of the positive pole in cataphoresis from the current itself; but the real anesthesia comes from the cocaine.—*Western Dental Journal.*

Communicated.

NORTHERN ILLINOIS DENTAL SOCIETY.

The tenth annual meeting of the Northern Illinois Dental Society will be held at Rockford, October 20 and 21, 1897. A great program is in the course of preparation, and the profession generally is invited to attend.

LOUIS OTTOFY,
Chairman Executive Committee.
J. W. CORMANY,
Secretary.

Monthly Summary.

ACETANILIDE AS A DRESSING.—Morton writes in the *Polyclinic* of February 16, 1895, that the action of acetanilide upon wounds, especially granulations, when used in full strength, is to produce intense dryness, blueness, and to check at once and to prevent the formation of pus. Upon extensive granulating surfaces and chronic ulcers a slight burning sensation is at first perceived, which is rapidly succeeded by a sedative or anesthetic effect. If used in sufficient quantity, a thin scab of acetanilide, combined with the wound secretions, forms under which healing rapidly progresses. If a very large surface is exposed to the action of the undiluted drug, toxic symptoms promptly supervene in susceptible individuals. It is probable that children and the aged are more sensitive to its absorption than are vigorous middle-aged persons. It is also probable that anæmia might follow too prolonged application of large quantities of the substance, because of its destructive action upon the red blood-corpuscles; this, however, he has not seen. The powder does not, as a rule, stick to wounds or hold dressings fast; but when it does so, alcohol causes instant release by dissolving the drug.

Under no circumstances does acetanilide irritate the skin or wounds, even when used beneath impervious protectives or antiseptic poultices.

What may be the best vehicles for applying acetanilide must yet be proved. Upon most of his cases the pure powder was used from a dusting-box. This, while usually safe, he thinks, has been an unnecessary waste, for very recent experiments in dilution have shown him that a one-fifth to one per cent. mixture with petrolatum was sufficient to arrest suppuration and secure rapid healing in an extensive septic scald. All pain vanished after the first application.

Acetanilide dissolves in five volumes of alcohol, in twenty volumes of ether, and in two hundred volumes of water. It is soluble in liquid petrolatum to the extent of forty grains to the ounce. In chloroform it very freely dissolves.

By diluting with water a saturated alcoholic solution of acetanilide, the drug will be thrown out of solution in the shape of fine crystals, and will remain perfectly mixed in suspension long enough to permit of its use in this form as an injection for abscesses or carbuncles, in gonorrhea, etc.

In the large number of cases in which he has freely employed acetanilide, but twice have toxic effects been noticed; one was in an infant aged fourteen months.—*The Therapeutic Gazette.*

A SIMPLE WAY OF PUTTING ON METAL BACKINGS FOR VULCANITE WORK WITHOUT SOLDERING.—By Dr. Kessell.—We make use of this plan in partial cases where patients are liable to break off the porcelain, leaving the pins in the plate. Any metal of gauge 27 or 28, either gold, platinum or Columbian silver (he uses the latter exclusively) may be used. After the plate tooth is ground in position, a piece of the metal, the width of the tooth and one-half to three-quarters of an inch in length, is first annealed, then holes cut in it to accommodate the pins of the tooth. The metal is slipped over the pins, and they are bent to form an X. The tooth, with the metal in place, is then put back on the model, which is waxed up as usual. When the case is packed the rubber will surround the bent pins and the metal. The advantage of the backing is that it gives strength to the tooth, and it also allows the lower tooth to strike only against the metal instead of the thin porcelain. Rubber will vulcanize very well with Columbian silver, and it will hardly tarnish in the mouth. This process requires but a few minutes' work, and it removes the danger of checking the tooth or discoloring it by the heat required for soldering, nor is it necessary to have the case invested.—*Cosmos.*

A GOOD LAW.—In Bulgaria the proprietors of a medicine by which they claim to cure a specified disease are liable to be imprisoned if the medicine fails to produce the desired effect.—*Ohio Dental Journal.*

DISCUSSION ON LOCAL ANESTHESIA.—Dr. Haupt recommends the use of tablets of cocain prepared by Parker & Davis. The bottle in which the tablets are sold is a convenient measure for making the solution, one tablet in the bottle half full of water making a two per cent solution. The use of these tablets gives a solution always fresh and safe.

Dr. O. N. Heise has lately used eucain in ten per cent. solution, injecting about five drops as a local anesthetic. This seems absolutely safe, even with twice this amount. The effect is also more lasting than that of cocain.

Dr Otto Arnold uses eucain, and prefers it to cocain, as it appears to be free from toxic effects; but where teeth firmly imbedded are to be extracted there is nothing better than nitrous oxid. Statistics show there has been more fatalities from cocain than there had been from nitrous oxid, though the latter has been in use so much more generally and so many years.

Dr. L. L. Barber has better success with eucain than with cocain, and never has any alarming symptoms from its use. He thinks the amount of cocain that enters the system with the cataphoric administration was so small that no evil could follow its use. He has not used very strong solutions himself, but has heard of others using as high as seventy-five per cent. with no bad effect.

Dr. Snyder ; It is probable that bad results arising from the use of the hypodermic syringe often arise from lack of care of the hypodermic needle. If there is carelessness, the result will be that microbes will be conveyed into the wound made and cause trouble. The needle should be thoroughly disinfected always before use, and care should be taken to avoid the periosteum. The surface of the gums also should be clean before the injection is made.

Dr. Jones ; When it is necessary to extract teeth, we should use some means to avoid pain. It is a duty we owe to the human family. In making an injection he did not make it close to the teeth, but in the deep tissues, where it is easy to get. Cocain acts on the ends of the nerves of sensation.—*Cosmos.*

KAISERLING'S METHOD FOR THE PRESERVATION OF SPECIMENS WITH THEIR NATURAL COLORS.—The above method was referred to by Dr. W. F. Whitney, at the March meeting of the Boston Society of Medical Sciences.

Slices of organs from 3 to 5 ctm. thick are placed from 3 to 5 days in :

1.	Formaldehyd,	200 c.c.
	Water,	1,000 c,c.
	Nitrate of potash,	15 gme.
	Acetate of potash,	30 gms.

They are then removed, the fluid allowed to drain off and placed in :

2. Alcohol 80 per cent. for 6 hours, then
Alcohol 95 per cent. for 2 hours.

From this directly into

2.	Water,	2,000.
	Acetate of potash,	200.
	Glycerin,	400.

For permanent preservation in a dark place.

Further details for the preservation of whole organs, etc., should be studied in the original article (C. Kaiserling, Virch. Arch. Bd. 147s, 389).

The results thus obtained are certainly wonderful, and promise to be one of the greatest aids in teaching of this generation.—*American Medico-Surgical Bulletin.*

MEDICAL SUPERSTITIONS.—For toothache trim your finger nails on Friday; eat bread a mouse has nibbed, or bury a tooth in the hole of a mouse, or carry in the pocket a tooth from a soldier killed in battle, or from a murdered man. Kiss a mule. Rub the gums with the body of an ant, bee or fly, or prick them with a sharp twig from a sweet apple tree.

A NEW HEMOSTATIC.—Ferripyrin—a combination of one part ferric chlorid, three parts anti-pyrin and five parts water, has great hemostatic properties. It has an agreeable taste, and is readily applied. One application usually suffices.—"Dental Digest."

TO OPEN PULP CHAMBERS OF TEETH AFFECTED WITH PERICEMENTITIS.—By R. E. Sparks, M. D., D. D. S., Kingston, Ont.—We often have to open up teeth which are very tender to the touch. The pressure necessary to make a steel drill enter the outer layer of enamel, together with the shocks caused by the revolutions of the flat-sided drill upon the uneven surface of the tooth, causes excruciating pain. To avoid this, grind, with a small stone, a pit at the point at which you wish to enter the tooth. The drill will then run smoothly and penetrate much more easily. When desiring to open on the palatine surface of the incisors or canines, after grinding the pit, take an inverted cone bur, a little larger than the drill intended to be used, and cut into the pit the depth of its diameter. This gives a flat surface for the point of the drill to start into, and avoids the shocks before spoken of. Keep the point of the drill well lubricated with oil of turpentine or glycerine.—*Dominion Dental Journal.*

A HINT ON EXTRACTING.—B. E. A. Randall, D. D. S., Truro, N. S.—I have often seen an operator's face and shirt front bespattered with blood, from extracting teeth, while the patient was under an anæsthetic. This is unnecessary. I use nitrous oxide as a general anæsthetic. The moment that the inhaler is taken from the face I push a small sponge into the mouth; this prevents roots, which I may drop in the mouth, from being drawn back into the trachea, and absorbs the blood which would otherwise be swallowed or blown out in the operator's face, and does not prevent breathing, as the patient breathes through the nose.—*Dominion Dental Journal.*

AMMONOL.—Dr. Watkins, at the First District Dental Society, State of New York, reported in December *Cosmos*, described ammonol, one of the coal tar products, as the most satisfactory preparation he had used for pericementitis. In cases where a tooth has been filled for some time and becomes sore and elongated, ammonol given in 5 to 15 or 20 gr. doses will entirely remove soreness in a short time.

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ARTICLE I.

PRACTICAL THINGS WITH ILLUSTRATIONS.

BY PROF. J. G. TEMPLETON, PITTSBURG, PA.

Read before Ontario Dental Society.

In your programme, I see that one of the subjects is "Popular Dental Education." Now there are so many ways to educate people, and we obtain our education through so many different channels, that we have thought to suggest two things as being worthy of particular attention by our profession at the present time. They are, first, a much better preliminary education as a qualification for entering our profession; and, second, "The *suppression of the horrible* in dentistry."

However, I suppose that the meaning of the phrase, "popular dental education," has reference to the laity, so to speak, or the people at large. As it is well known to us that there is scarcely anything with which they have more to do, and yet about which they possess so little correct knowledge. Now in reference to the best method of disseminating the proper information, it has long been in the mind of the writer that the best method for the diffusion of correct ideas concerning the duties and operations of the dentist, would be carefully prepared lectures delivered before all our teachers' associations, supplemented by giving the same before the advanced classes in all our schools.

The Making of Artificial Dentures a Fine Art.

Yes, so it is. But when we go among the people and see the horrible imitations called artificial teeth in use by the people, we are inclined to think that the fine art part of what we see is quite a joke. Hence the conclusion, that the suppression of the horrible is greatly needed. It is no honor to us, that in this age of progress in the arts and sciences, so many evidences of the low standard of art in prosthetic dentistry should be seen everywhere we go. Yes, *false teeth* everywhere; they grin at us in the street, at church, in the theatre, everywhere, like a horrible nightmare, while the poor, unsuspecting victim seems to enjoy their hideousness. No wonder artificial teeth can be had for such a low compensation; they all look alike—like a job-lot, for this reason educated people have a perfect horror of them and feel robbed if they have to pay anything for them. One great defect of many sets of teeth, as we see them in use, is their youthful appearance; they look as if they had been borrowed from some younger person. The dental artist, like the sculptor and portrait painter, has the artist's license to make his subject look a little younger and, if possible, more beautiful; but if he should err by carrying this too far, he then produces a caricature and the result is just the opposite of what he hoped to accomplish, and from what we often see, we are very often inclined to think that many dentists must be color blind or else we would not see so many sets of artificial teeth the color of well watered skim milk. The remedy is, educate the people æsthetically.

To Keep Instruments Nicely Polished.

Burnishers give better results when new than when tarnished, and it is essential to keep them finely polished;

in fact, it is desirable to keep all instruments polished. An efficient device for polishing can be made by fastening a piece of sole leather on a block of wood of suitable size and placing a little diamantine powder on this surface. Diamantine is used by jewelers and can be obtained from them or from their supply houses. Diamantine is nothing more or less than oxide of tin, and can be obtained from a wholesale drug house for about sixty cents a pound.

To Make Gutta-Percha Fillings Moisture Tight.

Dry the cavity well, place in it a pellet of cotton saturated with absolute alcohol; remove the cotton, and with a warm air syringe, evaporate the alcohol; varnish the cavity with a solution of common resin in chloroform, warm the gutta-percha and pack into the cavity with a cold instrument; heat a thin bladed instrument and pare off the surplus filling, after which a fine polish can be given to it by rubbing with a little oil of cajeput.

Placing Rubber Dam on Lower Front Teeth.

A slip noose can be put on the lower front teeth with one hand, while the rubber dam is held down with the other; get the slip knots ready first, draw them tight and they will hold as long as wanted.

The Use of Beads.

The use of clamps can very often be avoided in filling teeth by tying one or two small beads near the middle of the string used as a ligature; after placing the rubber dam, tie the ligature so that the beads will come on the lingual side of the tooth and the rubber dam will not slip off over the beads.

Excavators.

The writer is of the opinion that the old fashioned excavator and bur drill should be used in the preparation of cavities much more than they are now; we are inclined to think that the engine is relied on too much for this purpose.

Thermal Changes.

To protect from thermal changes, particularly in deep cavities where the pulp is not quite exposed, first dry with bibulous paper, then apply, on a small pellet of cotton, absolute alcohol which has a strong affinity for any moisture that may be left in the cavity or open ends of the tubuli; when the cotton is removed, evaporation takes place rapidly, leaving the cavity perfectly dry. Now varnish inside of cavity to near the margin with a solution of common resin in chloroform or of gum sandarach, dissolved in sulphuric ether, then take a small piece of asbestos felt, moisten with pure wood creosote camphophenique, or oil of Eucalyptus, and cover the side to go next to the pulp with a mixture of iodol oxide of zinc and vaseline; after this is in position in the cavity, place over it a thin piece of lead or a thin piece of aluminum plate, which will prevent pressure against the most vulnerable point in the bottom of the cavity, while inserting either a gold or other metallic filling. We often cover the bottom of deep cavities with a jelly made by mixing carbolic acid and colodian together, then absorb the acid with cotton or bibulous paper, which leaves the colodian residuum of a leather-like substance, and over which we place the asbestos, and we think we have an excellent remedy against thermal changes.

To Take a Perfect Impression for Partial Upper Plate.

To take an accurate impression of the mouth for a partial upper set of teeth, smear plaster over the roof of the mouth with the finger, take a string about a foot in length; tie the ends together, put the tied ends of the loop into the plaster on the roof of the mouth and add more plaster to thoroughly imbed the knot, leaving loop of string hanging down. In placing the plaster in the mouth, care should be taken to have it come full half way over the grinding surfaces of molars and bicuspids and also cutting edges of the front teeth; then trim the plaster and varnish the trimmed surfaces. The plaster should be so trimmed that it will fill up fully one half of all spaces between the teeth; then cover all the remaining surface of the mouth and teeth with plaster, being very careful to have the teeth well covered and spaces filled in, putting plaster for the buccal and labial surfaces. When set, the plaster impression readily parts where it has been varnished, the palatial portion is dislodged with the help of the string used, and the pieces are then placed together and model made. If a tooth is irregular, use modeling compound about it and trim suitably, then apply the plaster. When removing, it breaks where joined; then remove compound, place in position in the impression and pour the model. Before pouring, the impression should be coated with a lather of soap and then immersed in water for about ten or fifteen minutes. When the plaster has had sufficient time to set, separation can be made, and a model thus obtained will not have any of the fine lines obliterated.

Articulating Teeth.

Always take an impression of the lower teeth when making an upper set, and in taking the bite, have wax trimmed to show the length you wish the teeth to be, and bite into it just sufficiently to show the tips of cutting edges and cusps where the model made from lower impression can be placed in proper position, etc. For double sets, make wax models for contour in restoration of features and to show length of teeth, and then try these models in the mouth, being careful to see that you have it right; then make plaster articulating models for setting up the teeth, setting up the lower ones first against a plaster articulating plate, its articulating surface corresponding with the articulating surface of lower wax model; then lay aside the plaster articulating plate and put the model of upper jaw in its place and set the upper teeth to the lower ones. The writer adopted this method about twenty-eight years ago, and in that length of time has not had to grind a cusp off to let the front teeth come together. But a more elaborate description of this seems to be required in order that it may be understood and adopted as a practical method. Having to make a full upper set of teeth, we will suppose the impression and model to have been made in the usual way. Take modeling composition, soften and flatten out until it is about a quarter of an inch thick, press it on the model while warm and then cut and trim to make a trial plate for the purpose of taking a bite. It should fit the model accurately. Melt a little wax around on the ridge, then press a roll of softened wax on that and trim to what you think would be a sufficient length, then try in the mouth and carefully trim the lower edge to the proper length for the teeth; if it is not, either add to or cut away until it is found by trying in the mouth that the wax represents the proper length. This wax should be so cut on its articulating surface that all the lower natural teeth will strike at the same time when tried in the mouth. Now remove and soften the articulating wax surface just a little over the flame, then replace in the mouth and do not let the patient bite into it until you have the head drawn well back so as to put the anterior muscles of the neck on a stretch; then have the patient bite a little on the wax just to get an impression of the cusps and cutting edges of all the lower teeth. Next take an accurate impression of the lower teeth, from which make a plaster model which will fit into the slight impressions of the teeth made in the bite taken, and then place the whole on any good articulator which can be set to maintain the relative positions. Remove the bite and you are ready to set the teeth to a correct articulation, and if all has been carefully done, the teeth will come together properly without any subsequent grinding.

For a double set (upper and lower) make trial plates of modeling composition to take the bite on, putting a piece of rather stiff wire in the lower one to stiffen it. Wax the ridges as previously described. Place a roll of softened wax on the upper trial plate, place the lower trial plate in the mouth, being careful to see that it is in its proper place, and hold it there while putting in the upper plate with the wax on it. Do not allow the patient to bite until the head is thrown back as far as you can get it, then tell the patient to bite, and keep the jaws closed until with the finger the wax has been well pressed on to the trial plates. Make the centre or medium line on the wax. Have patient close the lips, and then take a small straight instrument and mark on the wax the height of the lower lip. This mark should extend from one angle of the mouth to the other; you then have the line of fissure or line of lip closure; in other words, the height of the lower lip and length of the upper to serve as a guide in making the wax models. After thus taking the bite, place each of the models in the bite so obtained, and fasten in any good articulator; then prepare corresponding wax models, which should be tried in the mouth to verify their correctness. They should come together in the mouth the same as on the articulator, and if they do not they should be made to do so before proceeding further. Take particular pains to be satisfied that the wax models are correctly adjusted and give a natural expression to all the facial features, observing that the lower third of the face is in proper proportion or length with the upper two-thirds, and be sure to produce the proper fullness over the region of the upper cuspids to give as near as possible the natural contour. Then take the upper and lower plaster models off the metal articulation, and make a plaster extension to the back part of the upper model, on which place the wax models, which have been marked while in the mouth, so that they can be put in the same position out of the mouth. The lower plaster model is placed in position, and a plaster extension added to fit to that of the upper plaster model. After separating these, the lower wax model is placed on the lower plaster model, and the inside space filled with wet paper, and plaster is poured over all to make the lower articulating plate to which the lower teeth are to be set. Next place the upper model in position, after the lower teeth have been set, and set the upper teeth to the lower ones which have just been set to the lower articulating plate. Always set the lower teeth first. And in setting the upper teeth always set the bicuspids first.

Having made double sets in this way for twenty-eight years without having to do any grinding after placing them in the mouth, the writer is inclined to think that he has some claim to the conclusion that this method is a pretty good one.

To take a plaster impression with a small quantity of plaster, first take an impression in wax, and then cut away the palatal, buccal and labial surfaces to almost an eighth of an inch in depth, and over the surfaces thus formed out slight lines in different directions, with about two teaspoonfuls of plaster spread evenly over said surfaces, and reinserted and held in place until the plaster has well set, and you have obtained an impression that has no thick body of plaster in any one place to cause uneven shrinkage.

To Duplicate Models and Impressions.

Take printer's ink roller composition, heat in a water bath until well melted. Grease the model slightly with lard, and place it the same as if to mould a metal die, cover with a metal ring (a tin can opened at both ends will do), and pour the melted composition over the model. Let this stand over night. By morning the material is hardened, and the model can be withdrawn. The composition being elastic it retains its shape, and a hundred models may be poured if necessary.

To prevent plaster from adhering to the palatine surface of vulcanite plate. Just before packing the case coat the model with a thick solution of soap, almost any kind of soap will do, but that which makes a thick lather in the shortest time is the best.

To Line Vulcanite Plates with Black Rubber.

Before packing, coat the cast three or four times with a solution of black rubber, allowing each to harden or dry before applying the next. In swaging aluminum plates, always keep the plates between two pieces of silk tissue paper, to prevent its coming in contact with either the lead or zinc, either of which metals is injurious to it. In swaging any kind of metal plate the writer has been in the habit of first stamping that portion of the plate which is to fit to the roof of the mouth, and the rest afterwards, as we shall show in our illustration.

Models of Marble Dust and Plaster.

In vulcanite work the best results may be obtained by making models one-fourth marble dust and three-fourths plaster; also the same in flasking the case.

To Prevent Rubber Running Between Joints.

To keep rubber from running between the teeth and joints in vulcanizing, after the teeth are set in the first half of the flask, plaster, trimmed and varnished, pour water on all the teeth and joints, then mix a small quantity of pure plaster, have it rather thin, and with mixing spatula cover labial and buccal surfaces, also the joints, take up the piece quickly and bring it near the mouth, and blow rather sharply against the thin plaster all around, which will force it into all spaces between the teeth or blocks. After this finish flasking in the usual way, and, if possible, it is well to allow the case to remain over night in the flask before packing.

To Trim Rubber Plate.

In finishing vulcanite plates always trim the rim low over the bicuspids, leaving it high as can be worn over the cuspids, and the same over and back of the second molars; do not file rim to a knife-like edge, slightly bevel inside of rim at the top, extending down about three-sixteenths of an inch. In upper plates the back part, or that portion over the second molar should be left as high as it can be worn, and in many cases the rim should project over the second molars; and also over the cuspids, such projections are often a very material help in retaining plates, particularly in that class of cases generally considered as unfavorable for retention.

TO MAKE PLATINUM AND GOLD PLATE.

To make platinum and gold plate, melt with blow pipe on a piece of platinum plate pure gold, and roll to desired thickness; the result will be as good as any you can buy.

GOLD SOLDERS.

Take a United States $5 gold piece, 20 grains coin silver, 10 grains pure copper, 6 grains English toilet pins; melt the silver and copper together first; after melting this and the gold together, add the pins, flow into an ingot and roll, cut into small pieces and melt again if it does not roll well first time; this will give a solder a little more than 19 carats fine, and flows nicely on coin gold, being the same color. This we call No. 1. Now take of

No. 1, ...	89 grs.
Coin silver, . .	7 "
Pure copper, . .	4 "

Melt together and roll, and we have a second grade which we call No. 2, and which will flow on No. 1. To make a still lower grade take:

Pure gold, . .	6 dwt.
Copper, . . .	2 "
Fine silver, . .	1 "

And you will have a 16 carat solder. In my practice only Nos. 1 and 2 are used, and are made according to the form 1 as given above.

TO SOLDER A CAP ON GOLD CROWN.

To solder a cap on a gold tube intended for an artificial crown lay the cap on about a tablespoonful of finely cut asbestos, put the tube in place on the cap, drop in the solder and a little powdered borax, then blow a yellow flame on the asbestos, all around the tube until the solder flows, and there will be no danger of melting the gold.

TO HARDEN PLASTER BOIL IN PARAFFINE.

To give your plaster casts or models the appearance of ivory boil them in pure white wax.—*Dominion Dental Journal.*

ARTICLE II.

THE PREPARATION OF DENTAL ALLOYS AND CEMENTS.

BY LOUIS SHAW, M. D., BROOKLYN, N. Y.

In view of the recent investigations of Dr. Black and his papers on "Dental Alloys and Amalgams," I have thought that some simple and definite instructions for preparing alloys might be of value.

There are doubtless many who would like to use alloys made after formulæ suggested by these investigations, but not being familiar with the apparatus and methods necessary, think the preparation of a dental alloy more difficult than it is.

I shall not discuss the various ways in which an alloy can be made. Each manufacturer of an alloy no doubt has a way of combining the metals that he thinks best. But I shall describe a method that I have used for a number of years with satisfactory results.

For melting the metals I have used a gas-furnace made by the Buffals Dental Manufacturing Company, and known as No. 40*a*,—Fletcher crucible furnace. This can also be had to work with kerosene. A plumbago crucible comes with the furnace. The other articles necessary are an ingot mould, a small pair of crucible tongs, and a short clay pipe-stem.

The silver is first melted, adding enough borax to cover its surface and protect it from the air. If the alloy is to contain copper, the blast must be kept up a few minutes to raise the temperature of the melted silver. The copper, in the form of very thin sheet or foil, is now added piece by piece.

If it is to be an alloy containing gold, the proper proportion of gold-foil scrap, wrapped in a piece of paper, is dropped into the crucible.

When the gold or copper is melted, the blast is kept on a few minutes and the other metals of the alloy added, those having the highest melting-points first. Thus tin, of course, will come last, and is best added in pieces the size of a large marble.

As soon as the last piece of tin is added the crucible is held in the furnace by tongs and its contents stirred vigorously with the clay pipe-stem, suitably fastened to a piece of wood. While still stirring, the metal is quickly poured into the ingot mould. The stirring and pouring before the metal comes to rest is to produce as uniform an ingot as possible.

Some may have difficulty in procuring pure metals. Pure silver, in grain form, is sold by gold and silver refiners. Pure copper, zinc, and tin can be bought from those who supply analytical and experimental chemists.

The ingot is readily reduced by a large coarse file, which must be kept for this purpose only. Passing a magnet through the thinly spread filings will remove any particle of steel from the file.

The filings must now be tempered as directed by Dr. Black either by keeping them in an oven at a temperature of 120° F. for three days, or putting them in a glass flask and immersing the flask in boiling water for fifteen minutes.

Until I read Dr. Black's paper in the *Dental Cosmos*, last August, I had been using two formulæ for alloys, based on Dr. Flagg's experiments. One was silver sixty parts, gold five parts, and tin thirty-five parts; the other substituted five parts of copper for the gold, leaving the silver and tin the same.

Lately I have adopted three formulæ suggested by Dr. Black. They are the following: one of silver and tin,—viz., silver, seventy-four parts; tin, twenty-six parts; one containing copper,—viz., silver, sixty-four parts; copper, four parts; zinc, one part; tin, thirty parts; and one containing gold,—viz., silver, sixty-eight and one-half parts; tin, twenty-five and one-half parts; gold, five paris; zinc, one part. Dr. Black speaks favorably of this last formula in the *Dental Cosmos* for December, 1896.

CEMENT.

As is generally known, cement powder is oxide of zinc, usually with some silica added with the idea of making it more resistant to wear.

In most of the directions for preparing this powder, oxide of zinc is dissolved in nitric acid, and the nitrate of zinc is afterwards heated to drive off the nitric acid, leaving zinc oxide.

This part of the process is enough to deter most dentists from trying to prepare cement powder, as the fumes of nitric acid are very corrosive, and difficult to get rid of, except through a chimney arranged for carrying off acid vapors.

This dissolving of the oxide is not necessary, and, by omitting it any one can prepare the powder with little difficulty. Most oxides of zinc made in the United States are too impure for dental use.

French oxide of zinc is much purer and makes a very good cement. Hubbuck's English oxide of zinc is the purest I have been able to obtain, and produces a very white cement. All other oxides I have tried produce a more or less yellow product. This yellow color is owing probably to traces of the oxides of other metals. These are not sufficient, however, in the oxides of zinc prepared for medicinal use, to affect their value of cement. If a white cement is not desired, they answer very well.

The oxide is placed in a sand crucible and the cover luted on with potters' clay mixed with water.

The crucible is now placed in a coal-fire—a range will do—and covered with coal, so that it will all be brought to a red heat. After being held at a red heat for two hours, it is removed and allowed to cool.

The oxide is now removed, and rubbed to a fine powder in a Wedgewood mortar, when it is bottled to keep it from the air.

The liquid is made by dissolving in water sufficient glacial phosphoric acid to make a dense syrupy solution.

It is difficult to state the exact composition of the liquid chemically, as all commercial glacial phosphoric acid contains from seven to fourteen per cent. of sodium phosphate. On being dissolved, the glacial phosphoric acid slowly takes up another equivalent of water, and finally a third, becoming at last ortho-phosphoric acid. The liquid may then be a mixture of the three phosphoric acids holding sodium phosphate in solution. My knowledge of cement liquid is unsatisfactory, and I cannot always get uniform results with different lots. I have not been able to get pure glacial phosphoric acid, but hope with further study of the phosphoric acids to be able to prepare a liquid that will be always uniform. The process described, however, produces an oxyphosphate cement that compares favorably with any I have purchased, both as to working qualities and insolubility.—*International Dental Journal.*

ARTICLE III.

THE PHYSIOLOGY OF CATAPHORESIS.

BY WESTON A. PRICE, CLEVELAND, OHIO.

Read before the American Dental Association at Old Point Comfort, Va., August, 1897.

We will at this time confine ourselves to a consideration of the phenomena attending the application of an electric current to the human body, with and without an interposing medicament, and especially as applied to the dental organs.

There are three distinct theories as to the forces at work and their particular action in these processes, and and since there is such a diversity of nomenclature and variety of method for the application of these forces, we will include in this consideration all the methods of applying an electric current to the dental organs for producing anæsthesia, whether used in conjunction with a medicament or not. The theories are,—

1. The polarization of the tissue, producing an inhibition of the sensory impulses.
2. Osmosis.
3. Electrolysis.

The first theory provides that when an electric current is applied to a tooth with or without a medicament, the conditions produced are due entirely, or almost entirely, to the effects of the current, and not due to the medicament, other than its assistance in conducting a current. Another division of the first theory is that a constant current applied to the dental branches of the trifacial nerve, with the positive pole applied to the tooth and the negative pole over the Gasserian ganglion, inhibits the normal sensory impulse. The leading advocates of this theory maintain that a certain and definite amount of current applied in the manner just described will produce a condition of anæsthesia in the tooth, and that either too little or too much will not produce this condition. They call it "short-circuiting" the nerve. For this application, the positive pole of the constant current is attached to the dental engine in such a manner as to make the bur the electrode, the hand-piece being insulated, and the negative pole is applied over the Gasserian ganglion upon the same side as the tooth to be operated on, which is perfectly insulated.

The next theory provides that the medicament which is applied under the electrode is the agent which does the work, but that it is carried in by physical force, that in some way, just as a stream of water carries sediment with it, so the electric current carries the ingredients in solution with it through the solvent and through the tissue. The advocates of this theory have furnished almost all the literature that has been written on the theory of cataphoresis since its advent; and among its ranks are to be found many of the foremost men in the dental and medical professions. The most exhaustive articles bearing on this theory have been written by Drs. Morton, Peterson and Phillips, while a number of shorter articles have appeared from other writers.

The theory of electrolysis provides practically that all the effect produced in passing an electric current through a medicament, as applied in cataphoresis or in any other way is electrolytic. I have not been able to find a single person among the writers for the medical and dental profession defending this theory; it may, however, be worthy of consideration.

As the next steps let us consider,—

1. The physiological effect of a constant current on nerve tissue.

2. The laws governing osmosis.

3. The laws governing electrolysis.

I have demonstrated elsewhere, and verified repeatedly, that the resistance through a tooth, accordingly as the cavity is wet or dry, will vary all the way from thousandths to hundreds of thousandths of ohms. I have measured cavities in dentine after dehydrating, and found them to vary from twenty thousand ohms to over one million ohms, and in different parts of the same cavity almost that amount of variation over the surface of the dentine alone; through the enamel, of course, those figures would be multiplied by thousands.

Two things must be evident to every one at a glance, viz., that in delivering the current to a tooth from the bur as the positive electrode, it is impossible to have a uniform amount of current flowing, as the bur is moved to different parts of the cavity, owing to the variableness of the resistance of the different parts of the cavity, and that with so very high a resistance it would be impossible to have more than an extremely weak current flowing, unless the potential were very many times that used.

It has been demonstrated by Nernst and others that "the osmotic pressure is independent of the nature of the solvent, and, in general, obeys the laws of gases." Various proofs for establishing this law are given in Nernst's "Theoretical Chemistry," 1895. It has also been demonstrated that "solutions having the same osmotic pressure can be obtained by dissolving equimolecular quantities of the various substances in the same solvent."

Since the nature of the solvent has nothing to do with the osmotic pressure it at once becomes obvious that,—

1. It does not matter what solvent we use for our cocaine, providing it is the force of osmosis that accomplishes the work.

2. Since the osmotic pressure is in different proportion to the concentration, the solution should be as nearly saturated as possible.

3. Since the osmotic pressure is increased to a definite extent by each degree increase of heat, the solution should be kept as hot as possible.

These observations hold good for practical application, if the force we are dependent upon is osmosis. We can make our deductions both from a clinical and theoretical standpoint. Will osmosis carry cocaine into dentine to any considerable extent? To answer this, I have sealed a saturated solution of cocaine into cavities for two days, and again for two months, without producing anesthesia except on the very surface of the cavity. I have also applied it for some time on an exposed pulp, and could not go very far into it. Sulphate of strychnine and bichloride of mercury applied on cotton to the chest of frogs produced no physiological effect, while with a current, death was produced in a few minutes. This at one stroke seems to answer the question as to whether osmosis alone can produce this condition.

We are forced to conclude from the clinical observations and theoretical probabilities that osmotic pressure is not the force on which depends the transmission of cocaine through dentine into the pulp. This brings us to a consideration of the last question—viz, What are the laws of electrolysis?

What is electrolysis? It is the change that is effected by the passage of an electric current in so far as the electricity exhibits itself as such.

How is electrity conducted? As expressed by Nernst, and translated by Palmer, "The conveyance of electricity in conducting substances may happen in two different ways,—viz., with or without the associated transportation of matter. The latter happens in the case of metallic conductors (second class); hence these are called conductors of the first and second classes respectively."

A solution conducts electricity the better the more numerous the ions and the smaller the friction which the ions encounter in their migration. This conception may be applied unchanged to every substance which conducts electrolytically, whether gaseous, liquid, or solid, whether simple or mixed.

Let us now apply some of these laws of electrolysis to the particular process with which we are interested. Suppose the positive pole be applied to the dentine of a tooth and the negative to the cheek. An interposing layer of medicament, say cocaine, in watery solution, is between the metallic positive electrode and the dentine. The only way electricity can get from the metallic positive electrode to the metallic negative electrode is by the dissociation of some of the molecules, in every instance of the second class through which it passes. In every part of the course through the cocaine solution, the dentine, the pulp, the connective tissue, the blood-vessels, the muscular tissue, and the sponge on the negative electrode, there will be a cleavage of some of the molecules of the various chemical compositions into a positive and a negative ion. These ions with equal force and chemical equivalents start on their respective journeys towards their opposite poles. They meet with friction which varies from different ions, and since they have the same force behind them, pushing them, their velocities will vary with varied resistance. If in their course they meet a new ion, or an element or compound for which they have a greater affinity than the force which separated them, they will unite with it until they are again called into service. Unless an ion found such an affinity, it would keep on going until it got to the metal plate of the negative electrode, and if it could unite with it would do so; if not, it would be deposited upon it or be liberated in the form of gas.

According to the older theories, there was supposed to be a physical force exerted in some manner by the electric current, and this theory has yet its advocates. There is a newer theory, however, which is made by its introducer to explain all the phenomena. Its author is Nernst, of Gottingen, Germany. He maintains that there is no transmission of matter, except the ions themselves.

The final goal is, of course, to diminish the time. I do not believe this will be done by seeking directly for a substance that has a high osmotic pressure, but rather in seeking for a reaction that will produce the most active ion. It is true, however, that substances that have a high osmotic pressure have good conductivity. Since the amount of current we can use is limited by the pain limit of the tissue, and the amount of electrolysis is a constant expression of the strength of current, of course the amount of chemical energy we can liberate is fixed, and we cannot hope to change this unless we can change some of the laws of their physiology, electrolysis, or chemistry.

We have left these unfixed conditions to modify,—viz., to select the ions with the greatest migration facility, and which themselves, or the compounds they will form, will produce greater physiological effect upon the tissue for the same unit of concentration in the tissue. There is no reason why great advancement should not be expected, and it is my opinion that when it does come it must come along this line.

I am indebted for valuable references to Professor Morley, of the Western Reserve University, Professor Miller, of Case School of Applied Science, and Professor Herdman, of the University of Michigan.—*International Dental Journal.*

ARTICLE IV.

OXYCHLORIDE OF ZINC.

BY S. T. KIRK, D. D. S, KOKOMO, IND.

This, the oldest of our cements and usually known as os artificial, is, in its proper use, the very best of the cement family. There are preparations of the oxyphosphates that will stand in exposed places better, but there are none which have so good preserving qualities.

In the days of long ago, more than a quarter of a century, the older members of the profession remember it as the only cement at our command. It is from the observance of its use in the past that I wish to speak. Having practiced in the same place for more than thirty years, I have had a good chance for observation.

Early in my professional life I learned that many failures came from the filling of roots with gold, and even from the most eminent practitioners; circumstances led me to fill roots with os artificial instead. And in after years I have learned its true value, especially since crowning has been in such common use. I find many roots of teeth that were so filled, the crowns having been entirely broken down to the line where the os artificial protected it, and then remained in good condition, waiting to be redeemed and placed to good use in supporting the modern crown. I have found many roots buried by the gum, and, after consulting my record and finding they were filled with this material, I have immediately disposed of the gum and found the root solid and able to hold a useful crown. I use that preparation of oxychloride of zinc known as os artificial, and for many years I filled the entire root with it, but often, if great care is not used, the fluid will pass through the foramen and cause inflammation of the periosteum; hence, on the introduction of gutta-percha for root-filling, I fill the canals partially with it, but invariably use the os artificial for the main part of pulp-chamber. I think the fluid permeates the tubuli and preserves the whole tooth-structure as nothing else can. For the same reason I use it in all large cavities, covering the nearly exposed pulp with a non-irritant. I fill the cavity one-half or two thirds full of the os artificial, pressing it solidly into its place with spunk. This cannot be done with the oxyphosphates.

Thus far it makes a better filling to preserve the tooth-structure than any metal, and at the same time makes a solid and even foundation upon which to build the metal, which need be no more, in many cases, especially large crown cavities, than as a cork to a bottle.

In filling a root having an alveolar abscess with fistulous opening, if a small quantity of the fluid passes through the foramen and the canal is immediately filled with cement, it invariably becomes sound and well in a short time, and remains so.

The two points to be guarded against are: first, in root-filling, not to let the fluid pass through, as it will inflame the periosteum; second, to protect the nearly exposed pulp in large cavities.

A piece of cotton moistened with the fluid is most excellent to wipe out all cavities before filling, on account of its preserving qualities.—*American Dental Weekly.*

ARTICLE V.

SINGULAR DEATH FROM CHLOROFORM AT YARDLEY.

Mr. A. H. Hebbert held an inquest at the Yardley Arms Hotel, on the body of Norris Wilmott Kenyon, aged 17, who lived with his mother, a widow, at Ashton Hill Cottage, Yardley, and who died from chloroform he had taken to alleviate the pain of toothache, to which he was a victim.

Annie Kenyon, 45 Edgware Road, London, said the deceased was her brother, her husband taking her name for the purpose of their business. Her brother was the last who saw him at eight o'clock on Thursday night. He looked very well, having just had a holiday, from which he returned on Wednesday. He suffered from neuralgia, which came on after he had gone to bed. She had found chloroform in his drawer, and asked him if he kept it about in those quantities. He said, "Yes." She told him that it was very careless, and that people who used chloroform sometimes had accidents. He replied that it was all right. He knew all about it, and used it for toothache. Chloroform was sometimes used in the factory, and her brother would have occasion to go to Southall's—from whom the chloroform was obtained—to order acids, etc., for the business. She had no reason to think that he would commit suicide. She spoke to her mother about his having chloroform, and the mother told her that when she had taken some away, he replied that it was no use doing that, as he could get quarts if he wanted. He would always have his own way. He used to suffer from neuralgia after a long ride. Another brother of hers, aged about twenty-four, shot himself about ten years ago, about ten miles from Brighton.

Mrs. Pepperell, housekeeper at the house of the deceased's mother said deceased had for long been in the habit of taking chloroform for neuralgia.

Herbert Hollich Kenyon, managing director of a funeral company, stated that he was staying at Ashton Hill Cottage. He went to deceased's bed-room a little after eight o'clock. His brother-in law was lying in bed in quite a natural position. Witness saw by the appearance of deceased's face that something serious had happened. He felt his heart, and found he was quite dead, although the body was just warm. A handkerchief was over the nose and mouth. Deceased had told him that chloroform was a pleasant thing to take. He drank it in small quantities, and witness had warned him as to the danger. There was no reason why the deceased should commit suicide. Witness and deceased chloroformed a litter of kittens a fortnight ago.

The evidence of Dr. Pugh showed that death was due to the inhalation of chloroform, although it was quite possible that the actual cause of death was suffocation by vomited matter in the mouth rather than poisoning by chloroform. The excessive rigidity of the body indicated that the amount of chloroform taken was not very large.

The jury unanimously returned a verdict of "Death from misadventure," and offered their deepest sympathy with the relations.—*British Journal of Dental Science.*

ARTICLE VI.

THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

EDITORIAL IN *Dental Practitioner and Advertiser.*

In the last number of this journal we gave our impression of what would be the consequences of the persistence of the National Board of Dental Examiners in the course which they seemed to have marked out for themselves. It is a great deal of satisfaction when disaster overtakes us, or seems imminent, to be able to say, "I told you so," however ungracious and irritating it may prove. We warned the members of the Examiners Association that their aggressive and unwarranted action would be resisted by the colleges, and would not tend to further the objects which they desired. There are members of the Association of Faculties who are as earnest in their labors for the advancement of the educational standard as can be any member of the Examiners Association. They also know how that can be brought about a great deal better than does any one outside.

All of these men were but too well aware that the cooperation of the Examining Boards, if not essential to success, would certainly aid in securing it. They knew that the colleges which were not so earnestly in favor of an advance stood quite ready to join issue on the question, and that they only sought for a plausible excuse to resist the onward movement. Any attempt at coercion would afford that very pretext. The result has justified predictions, and the aggressive action of the Examiners Association resulted in a retrogressive instead of progressive movement in the Faculties Association. Again we should like to repeat the warning, that for the Examiners to go out of their province and assume to dictate to the colleges will be to invite defeat, and to retard progress indefinitely. The colleges cannot be thus driven. There will certainly be defensive action taken. If the Examiners attempt to carry out their threat of placing upon a black list and branding as unrecognized any institutions, it matters not how weak they may be, so long as they are recognized by their own State laws and the National Association of Faculties, the United States Courts will give them quick and effectual relief, and will punish such an assumption of power on the part of unauthorized persons. On this point the highest legal authorities are agreed.

We spoke plainly in the last number, because we thought that the occasion demanded plain words. We had a perfect right to examine into the qualifications of the members of the various Boards for the self-assumed task of placing an authoritative stamp of approval or disapproval upon our schools, and of demanding that they should conform to an arbitrary standard which unauthorized persons had erected. We still think that we were right. But we wish to disclaim any personal animus, or to be understood as calling into question any individual or professional status or standing. Some of those who have made themselves conspicuous in the invasive attitude of the Examiners Association, have expressed the feeling that we were personal in some of our expressions. We feel certain that anyone who knows us as we really are, will not make this charge. The men whom we most freely criticise are usually our dearest friends. Why! If we can not call a friend to account; in Heaven's name whom can we bring to book ? We can discuss a principle, and show wherein we believe that our best loved associate is wrong, without for a moment questioning his moral qualities.

We can learn nothing by antagonizing our enemies, if we have any. It is only those who are nearest to us who can do us good by taking the opposite side. If there is any one for whose good opinion and personal esteem we do not care, it is very certain we shall not step outside our path to endeavor to show him wherein we believe him to be wrong.

In the editorial article published in the July number, occur some expressions which subsequent knowledge has convinced us were founded upon misinformation. This we deeply regret, for though we may be very earnest, we intend to be just. What was said was upon the supposition that our source of information was reliable. But the assertion that one of the men who obtained the incorporation of the National Association of Examiners held an unearned diploma, and that their action was self-assumed, we are convinced was an error, and all inferences which may have been drawn from those supposed facts are and were unwarranted.

But this does not change what we believe to be the truth, that the National Association of Dental Examiners is overstepping its rights and privileges when it attempts to force the colleges to acknowledge its paramount authority, and to accept unquestioned its dicta. While individual members are amply qualified for such an office, if it were permissible, as a whole that body is incompetent.

In the first place, the Examiners Association has no standard for admission to its ranks. If through political chicanery or influence the most incompetent man in the whole profession is appointed to a State Examining Board, he is received by them without question. There is no provision that he shall have any special professional knowledge whatever, or that he shall be acquainted with the college curricula. It is not even necessary that he should be a dentist. He may be the most notorious quack imaginable, but if he has in any way obtained an appointment to a Board, he straightway becomes a judge in matters professional and ethical. The Examiners Association should establish some standard of its own, before it assumes to dictate one for other professional bodies.

It is undisputedly charged that less than half the members of the State Examining Boards are graduates from colleges. How can men sit in judgment upon matters of which they are ignorant? With what justice can they pronounce upon the qualifications of men in affairs of which they know nothing? They may be good practitioners and eminent men, but they must know what is and what should be the course of study pursued in our colleges before they can properly sit in judgment upon that course.

They therefore exceed their just functions when they assume jurisdiction over the colleges and their courses of study. They are supposed to be appointed for other purposes. There is plenty for them to do in looking to the enforcement of the various laws. Illegal practitioners abound in almost every State. There is a loud call for the suppression of irregular practice. Only the State Boards can properly look after these matters. And yet the actual enforcement of the laws on the statute books is almost a farce. Let the Boards look to these legitimate duties if they would serve their profession.

It is claimed that some of the colleges have graduated illiterate and unfit men. That is undoubtedly true. Yet in the Faculties Association there is a constant effort being made to remedy this, and year by year the standard is being raised. Only for the mischievous interference of the Examiners the ground gained last year could have been maintained. As it is, under the provocation of the unwise action of the Examiners, considerable has been lost. Those struggling for better things found that the Philistines were upon them when their locks were shorn. They were bound hand and foot, their eyes were put out, and sport was made of them in the temples of their opponents. The representatives on whose aid they had relied were in the toils of some seductive Delilah, the lust for office or the hope of gain. The standard already secured was placed upon the sacrificial altar, and its friends were powerless to rescue it, because the action of the Examiners had maddened its enemies. The friends of education need the co-operation instead of the opposition of the Examiners, until their locks are again grown, when they will pull down the temple of the Philistines, if they cannot be freed. Better all perish together than drag out an ignoble existence.

That some graduates have not the preliminary qualifications which they should have is of course true. One member of the Examiners Association, in a seeming desire still further to embarrass those who are earnestly striving for better things, publishes a list of absurd answers given before State Examining Boards. That is a sword that cuts both ways. Members of the Faculties Association have lists of questions exhibiting quite as great ignorance on the part of Examiners. The most absurd miscomprehensions of scientific facts are set forth in these questions, which seem called from books that the Examiners did not understand. A description of arteries and nerves that have no existence has been demanded. Terms have been used in many cases that are unknown to science. Positive contradictions of known facts are involved in queries. Lists of these are in existence quite as astounding as anything that can be culled from the answers of students, and the temptation to publish them is great, but the knowledge that all these things only embarrass those who are working for a better state of affairs, and will embitter a controversy that should not exist at all, prevent the retort which might be made to an unwise and injudicious member of a State Examining Board.

The Examiners Association persisted in a course against which the best friends of dental education protested. Some colleges may perhaps be intimidated into compliance with these demands. But there are those which, while they establish even higher requirements than anything that the Examiners Association demands, will not submit to insulting dictation. They desire co-operation and assistance in raising the standard, but they will not sign away their self-respect, and become the vassals of those whom they cannot admit as their masters in knowledge, or their superiors in integrity and honor.

ARTICLE VII.

THE NATIONAL ASSOCIATION OF DENTAL FACULTIES.

EDITORIAL IN *Dental Practitioner and Advertiser.*

Occasionally, unless the proper officers are on deck, the bark that is borne by the strongest current gets into the eddy, and is forced backward with a velocity that carries consternation to the hearts of the stoutest sailors. That was the case with the National Faculties Association this year. Last year, at Saratoga, those who are really desirous of seeing our educational standard advanced were very much encouraged. A decided step forward was taken, and the college skies were brightly illuminated with the rainbow of hope. This year as much ground was lost as had been gained in several, and the outlook is but a sorry one.

For some time it has been observed with feelings of apprehension, that there was a disposition on the part of the representatives of a majority of the colleges to admit everything to membership that made application. The most serious charges were glazed over, and there has not been a serious controversy raised, unless it was over the case of some institution which, either by the state law under which it acted, or by the known character of its promotors, must earnestly favor a high standard. The fact that there were one, or two, or three colleges already in existence in a city of moderate size, made no difference. Another applicant was promptly admitted, and the weaker it was ethically the more anxious seemed some representatives to have it get in. We do not mean to intimate that any unworthy motive prompted this, for we do not believe that the threatened danger was foreseen. But the consequences are now very forcibly felt, for there is a clear majority in the Association opposed to any raising of the requirements, or lengthening of the term.

Perhaps this statement is not quite correct. This year the bad results were due as much either to the treachery, the singular lack of comprehension, or the stupid fatuity of representatives from whom better things should have been anticipated, as to the deliberate efforts of the low-standard colleges. But the result was the same, no matter what the ruling motive. The attempt to sustain a higher preliminary qualification was decisively defeated. The whole matter was stupidly managed on the part of those interested in advancing the standard, in that they allowed the decisive vote to be taken on a minor question of sustaining the chair in an absurd decision, instead of bringing the matter squarely to an issue, and putting every man on record.

Last year, at Saratoga, a definite system of preliminary credits was adopted, which might give some absolute standard. It was the requiring of a certain number of "points" as the qualification for matriculation. This was in reality very simple, although some claimed that they could not comprehend it. With the exception of the common branches of reading, writing, spelling, elementary arithmetic and grammar, every study pursued for one term in any school above the grade of the common elementary or district school, gave a credit of one point. Thus if a student attended any recognized academy or school in which the higher branches were taught, for two terms, and successfully pursued five studies in each term, he was entitled to ten points. The record was to be determined upon the certification of the proper officers of the school. The diligent pupil might accomplish as much in one year as the sluggard would in two, and hence a premium was offered to assiduity. The standard adopted was that which would be about equivalent to one year spent in any good school.

But some of the colleges in the South and West insisted that this was too high. Their people were not sufficiently educated for even this low standard, and they could not comply with these requirements. This was an extraordinary admission to make, but it was gravely urged in open session. It was vain to remind them that there was no excuse for the existence of colleges in regions where there were no students fit for matriculation. They proposed to make dentists anyway, and they must use the only material they could secure.

At Saratoga, when the proposed system was tentatively adopted, the attention of men interested in general education was attracted to the movement. An expert in educational affairs was invited to address the Association upon the subject to which he had devoted his life. In formulating the plan for publication, the Secretary of the association was by vote authorized to consult him as to the list of studies that were to be considered academic. There was no charge that this was ever done, or that there had ever been interference of any kind, but in seeking some subterfuge for the undoing of the work of last year, the point was made that consultation with an expert in educational affairs who was not a member of the Association, although expressly sanctioned in advance by vote of the members, vitiated the whole proceeding, and made the legislation of last year null and void. The chair sustained the point, and ruled that the whole action was unconstitutional, and the laws adopted therefore inoperative and nugatory. An appeal was taken from the decision of the chair, *and it was sustained.* It was in vain that some of the representatives attempted to show the utter absurdity of the whole thing, and demanded a statement of wherein the action was illegal or unconstitutional. It was not even contended that the consultation of an outsider, if it had taken place, had in any way affected the matter or changed the status. No reason was given why this made the rules adopted unconstitutional. It was simply charged that it was irregular, and the chair so ruled, and he was sustained by vote of the Association. In fact, the chairman said he did not know just where the unconstitutionality lay, but he wanted it that way, and he ruled that way, and it seemed to meet the wishes of the majority, which was undeniable.

The editor of *The Western Dental Journal* in describing the scene in an editorial communication, says :

"At Old Point Comfort it was soon seen that the objection to the advanced requirements in the Faculties Association were in a majority, and that they had the presiding officer with them. A motion was made to reconsider the vote at Saratoga, and upon the point of order that it was illegal, the chairman ruled that it was in order because the former action was unconstitutional; being pressed to give a reason why it was unconstitutional, he could not do so, until a wag on the opposition side suggested that he might declare it unconstitutional because Mr. Melvil Dewey was given the courtesy of the floor to make a statement when the question was pending at Saratoga in 1896, when—Presto ! ! That fragment of a reason to hang their tattered hopes upon was just what they were looking for, and so this plaint chairman was sustained by a vote of 17 to 7 in declaring that the rules passed at Saratoga were void because—forsooth—an intelligent outsider was asked an opinion ! !

The whole proceeding was certainly comical. Usually grave and reasonable dental teachers voted to sustain the laughable decision of the chairman, as if they believed in its regularity, and generally level heads seemed to waver under the determined cries of 'Down with the Examiners,' 'Let them attend to their own affairs.'"

And so the National Association of Dental Faculties is practically without any standard of qualification for entrance into the colleges which compose its membership. It falls back upon the rule of some years ago. As near as can be determined that is as follows :

"The minimum preliminary educational requirement of the colleges of this Association shall be a certificate of entrance to the first year of a High School, or in states that have no High School, of graduation from a grammar school, or its equivalent, to be determined by an examination."

The whole essential part lies in the last line. The examination as to what he considers as an equivalent is to be conducted by the dean of the school. He can accept what he will, and he cannot be called to account for it. If he chooses to receive as an equivalent the ability to read and write, or even some practical knowledge in lieu of these, there is nothing to prevent it. So we are practically without any standard whatever, as far as the National Association is concerned. So long as it is in the power of deans to accept anything they may choose as an equivalent, any other regulations amount to nothing at all. There is not a representative of the objecting colleges who will not be ready to agree to any standard whatever, even though it be the diploma of a literary college, so long as he is given the power to say what he may accept as an equivalent.

Of course, this action cannot stand without disrupting the Association. The colleges which are determined to maintain a decent standard will never submit to have their diplomas placed upon the same level as those which practically have no standard. In the State of New York for instance, the requirement for graduation demanded by law is the possession of a certificate of the successful completion of a full four years' course in, and graduation from, a High School or Academy, recognized as maintaining the standard of the New York schools. We know of one dental college which will not long affiliate with schools that do not maintain a decent standard. The University of Buffalo will not see its diplomas thus debased. It will take no precipitate action, for it proposes to continue the struggle for a better state of things. But if this should be found hopeless, there will in our opinion be no refuge for the schools and universities which propose to keep up their standard, save in the formation of an association among themselves, and the refusal to acknowledge the tickets and diplomas of the colleges that will not conform. They cannot afford to have their honors debased in the estimation of other professions, and in other countries.

But we do not believe that the majority of the colleges in our National Association seriously intend that such a state of affairs shall continue. We do not believe that any man worthy a place as an educator actually desires that opportunity shall be afforded for the admission into our ranks of really illiterate men. We have more faith in professional honesty than that would imply. There were influences at work at Old Point this year, which threw more than one ordinarily level-headed man completely off his balance. It was felt by many that the Association of Dental Examiners had taken unwarranted ground, and had assumed an attitude toward the colleges that was unauthorized. Conservative men had expected some kind of a compromise, and so long as that hope remained the tone of the college representative was toward an advance. It soon became manifest that the aggression was to continue, and that the conservative men were relying upon false expectations. There are few who will tamely submit to attempted coercion on the part of those not armed with proper authority. Threats and menacing actions only arouse opposition, and the natural result of the hostile attitude of the Board of Examiners was to bring about a reaction, and tend to defeat the very object which they say they have in view. They certaintly showed very little wisdom in arousing the deep feeling which was the consequence of their action, if their primal object is to raise the standard of dental education. There are men in the faculties who are as sincerely desirous of elevating the schools as is any man in the profession, but they will not be coerced by those to whom they owe no special allegiance. They will fight to the last gasp for their independence and liberty, even though in so doing they must take up arms against those with whom there should be amicable relations. We believe that very much of the reactionary movement of this year is due to the unwarranted and unwise interference of the Examiners Association, and that progress will not again be resumed until the Examiners become the coadjutors instead of the foes of the colleges.

There was another proposed advance that was defeated this year, and that was the proposition to increase the length of the term from six to seven months. That question was carried two years ago, but at the earnest solicitation of the representatives of two or three of the colleges the action was rescinded, upon the distinct understanding that this was solely to allow them time to make the change without disorganizing their schools. They asked but a year or two, and then they gave the assurance that they would no longer oppose the change. Yet they were quite as bitter in their opposition this year as ever. Now any reflective man must be convinced that the school that remains in session but half the time is not doing the work that it should. It was confidently expected that all the colleges which now have more than a six months term would vote for the extension. It was a distinct movement forward, it was in the line of progress, and it is incomprehensible that schools claiming a high standing should not heartily support the movement. The vote was taken by colleges, and it was lost by a bare majority. The records show the following to be the vote in favor of making the term seven months :—

California University,	San Francisco, Cal.
Columbian University,	Washington, D. C.
Harvard University,	Washington, D. C.
National University,	Washington, D. C.
Chicago College Dental Surgery,	Chicago, Ill.
Northwestern University	Chicago, Ill.
Iowa University,	Iowa City, Iowa.
Boston Dental College,	Boston, Mass.
University of Michigan,	Ann Arbor, Mich.
University of Buffalo,	Buffalo, N. Y.
New York College of Dentistry,	New York, N. Y.
Ohio College Dental Surgery,	Columbus, Ohio.
Western Reserve University,	Cleveland, Ohio.
Pennsylvania Dental College,	Philadelphia, Pa.
University of Pennsylvania,	Philadelphia, Pa.

Against making the term seven months :—

Birmingham Dental College,	Birmingham, Ala.
Atlanta Dental College,	Atlanta, Ga.
Southern Medical College,	Atlanta, Ga.
Louisville Dental College,	Louisville, Ky.
Baltimore College Dental Surgery,	Baltimore, Md.
Kansas City Dental College,	Kansas City, Mo.
Western Dental College,	Kansas City, Mo.
Marion-Sims College,	St. Louis, Mo.
Cincinnati College Dental Surgery,	Cincinnati, O.
Philadelphia Dental College,	Philadelphia, Pa.
Tennessee Medical College,	Knoxville, Tenn.
Central Tennessee College,	Nashville, Tenn.
University of Tennessee,	Nashville, Tenn.
Vanderbilt University,	Nashville, Tenn.
University College,	Richmond, Va.
Royal College of Ontario,	Toronto, Ont.

Colleges absent and not represented :

University of Denver, - - -	Denver, Col.
Northwestern Dental College, -	Chicago, Ill.
Indiana Dental College, - -	Indianapolis, Ind.
Detroit Medical College, - -	Detroit, Mich.
University of Medicine, - -	Cleveland, O.

In the room but declining to vote :

Harvard University, - -	Cambridge, Mass.
University of Minnesota, -	Minneapolis, Minn.

The representative of Missouri Dental College, St. Louis, was not in the room.

The representative of the University of Maryland, Baltimore, was detained by sickness.

Colleges voting aye, - - -	15.
Colleges voting no, - - -	16.
Present but not voting, - -	2.
Representatives out of the room, -	2.
Colleges unrepresented, - -	5.
Total membership, - - -	40.

ARTICLE VIII.

ELECTRICITY AND DENTISTRY.

BY JAMES L. GETHINS, BOSTON, MASS.

Read before the Massachusetts Dental Society, Boston, June 2, 1897.

In addressing the Massachusetts Dental Society on this subject I feel like saying "Brother electricians," as I know you are well versed in the art. You all know how useful electricity is in dentistry. You see it in the dental engine, mallet, mouth-lamp, and in the much-discussed subject of cataphoresis. The question of using electric batteries in dental work has been considered and discussed, and seems to have been quite successful in some instances, while in others it has been a failure. In fact, I think I may say in a general way that electric batteries have received quite a black eye in the profession. With an experience of twelve or fifteen years the most successful thing is the storage battery, because you have very low internal resistance, and you have practically a reservoir of electricity, and the voltage is utilized in the external circuit instead of being wasted in the battery itself.

The question of the batteries, their value in proportion to the cost of maintenance, and the amount of care they require is important. We can use bichromates and acids, but these batteries are condemned because difficult to handle. There is one question that has been often put in reference to this, and I am surprised to find in the textbooks that the objection to the use of batteries has been the cost of zinc. That is all wrong. Zinc is very inexpensive, comparatively speaking. From two pounds of zinc we can get practically two horse power at a cost of about ten cents. The practical difference in cost between using a dynamo to produce current and electric batteries is in proportion of about twenty-five to one. For this light class of work, running dental engines, mouth-lamps, cataphoresis, etc., storage batteries are successfully used.

With reference to the subject of cataphoresis, I have recently made several tests, and was somewhat surprised with the result. Different concerns are putting out apparatus involving all the way from five cells of battery to fifty or sixty. I recently made a test in a doctor's office in this city, and the doctor's apparatus was successfully used for this very purpose,—cataphoresis. He had what he called the volt-selector. It was an apparatus that struck me as unique, for the volt-selector moved rather mechanically. I did not think that indicated the actual pressure. I said, "Suppose we put the voltmeter on and see what we get."

The result of that test was that I found when I moved the handle round, whether we had the battery current on or not, it indicated so many volts pressure. I wish to advocate very strongly in all transactions of that kind an accurate reading milliameter, and I think this question of cataphoresis resolves itself into this. It certainly is not the voltage that accomplishes the work, as sufficient voltage to overcome the resistance only is necessary. It is the actual quantity of current. It is a case of osmosis, pure and simple, and the idea of building up a high voltage, and getting one volt at the tooth when there are forty-four at the outside circuit, strikes me as absurd.

I suppose, of course, that you are familiar with Ohm's law, but I find that in practice it is the gentlemen who are not using it every day who become confused. You must always remember that the volts indicate pressure, and the volts and amperes are regulated by resistance.

Now, I met another friend in the profession the other day and he had what might be called a volt-selector, with simply ten cells of battery, and a switch in connection with it, so that he could use one cell at a time. That gave him one volt under the full strength of the battery. He found that five or six were all that were necessary to accomplish the desired result in from ten to fifteen minutes. The objection to that battery was that in removing the switch from one point to another the connection was broken, and the patient received a shock. His apparatus was very crude, but it appeared to me that he was getting down to first principles; he was actually finding how many volts he wanted at the tooth, and how much battery was required to do this work.

Now, I will give you a little illustration as to what this machine will do. We have on this dental engine four volts. and for that matter we could construct a dental engine so that it would run with two. We do not require fifty or one hundred or one hundred and ten. I brought this to show that the current and not the voltage does the work. [Mr. Gethins here gave an illustration of the running of the dental engine.]

When I use the cautery-knife it takes about twenty amperes of the current. [Mr. Gethins here illustrated the use of the cautery-knife.] That illustrates the point I wish to get at. That has really taken about twenty amperes of current to develop that intense heat which you notice. There are only four volts back of it, and it could be done with two, and all of this kind of work can be done with a very small storage battery. Probably the actual voltage I am using there now is about three. The principle of cataphoresis is somewhat similar in effect to the formation of a storage battery. We take the lead plates and apply the current to them in the battery, we oxidize one plate and deoxidize the other by the passage of the electric current. It does not make a particle of difference whether I have ten thousand volts back of that amount of current or only two and a half volts, I get the same effects on these lead plates. It is the electrical action which takes place, and, of course, it is a question of the actual quantity of the current.

I think, in a general way, on this subject of cataphoresis that it would be very well, indeed, if the practical electrician and the dentist should get together and experiment to find out exactly how much current is required. In fact, in looking this matter up, I have ascertained in a great many cases that it has taken about fourtenths of one milliampere,—that is, a pressure of one volt with twenty-five hundred ohms resistance. That is a minute current which we are using in this service, and, as I have stated before, I think if I were advising the use of any apparatus, I should test it very carefully, and be sure to know what I was doing, because I know that the dentists do not know what the effect would be of too much current.—*International Dental Journal.*

Obituary.

REPORT OF THE COMMITTEE ON NECROLOGY OF THE NATIONAL ASSOCIATION OF DENTAL FACULTIES, AT OLD POINT COMFORT.

PROFESSOR FRANK ABBOT, OF NEW YORK N. Y.

Whereas, Death has removed from our ranks Prof. Frank Abbott, of New York; and whereas, on account of his social qualities, his genial companionship, and his ability as a practitioner and teacher of dentistry, we realize the great loss to the profession in his death; therefore be it

Resolved, That we tender to his family the sincere sympathy of this association, and request that these resolutions be spread upon the minutes of the association; and be it further

Resolved, That a copy of these resolutions be sent to the several dental journals of this country for publication.

DR. FRANCIS PEABODY, OF LOUISVILLE, KY.

Whereas, Death has taken from among us Dr. Francis Peabody, of Louisville, Ky.; and whereas, we feel that in his death the profession has sustained the loss of an able practitioner and teacher; therefore be it

Resolved, That we tender to his bereaved family our heartfelt sympathy, and that we cause these resolutions to be entered upon the minutes of this association; and be it further

Resolved, That a copy of these resolutions be sent to the dental journals for publication.

Bibliographical.

THE AMERICAN TEXT BOOK OF PROSTHETIC DENTISTRY. By eminent American authorities. Editor : Charles J. Essig, M. D., D. D. S., Professor of Mechanical Dentistry and Metallurgy in the Dental Department of the University of of Pennsylvania. Publishers : Lea Brothers & Co., Philadelphia and New York, 1896.

This work, edited by the well known author of Dental Metallurgy, and consisting of valuable contributions by himself and other eminent practitioners and teachers, is composed of 760 pages of text which are illustrated by 983 engravings, many of which are original, clear and instructive, and will be a valuable aid to the student and practitioner of dentistry. The arrangements of the subjects treated, which include all that this branch of dental art implies, is admirable and the publishers are to be commended for the attractive style in which this treatise is printed. The contents consist of the following subjects all of which are treated in a clear and concise manner suitable for a text book.

The articles by the editor , Dr. Essig, are upon the following subjects .

"The Dental Laboratory; Its Equipment and Management," Metals and Alloys Used in Prosthetic Dentistry," "Moulding and Carving Porcelain Teeth," "English Tube Teeth; Their Use in Plate, Crown and Bridge-work," "Vulcanized Rubber as a Base for Artificial Dentures," "Hygienic Relations and Care of Artificial Dentures."

The subjects treated of by Henry H. Burchard, M. D., D. D. S., are :

"Upon the Preparation of the Mouth; Choice of Material and Type of Denture," 'Taking Impressions of the Mouth," "Making of Models and Their Preparation," "Dies, Counter-dies and Moulding," "Swaged Metallic Plates," "Selecting and Fitting the Teeth; Attachment to the Plate; Finishing," "Artificial Crowns," "The Assemblage of United Crowns (Bridge-work)."

C. L. Goddard, D. D. S,, treats of "Principles of Metal Work" and "Cast Dentures of Aluminum and Fusible Alloys."

Grant Molyneaux, M. D., D. D. S., upon, "The 'Bite' or Occlusion."

Ambler Tees, D. D. S., of "Continuous Gum Dentures."

W. W Evans, M. D., D. D. S., of 'Celluloid and Zylonite."

Alton Howard Thompson, D. D. S., of "The Temperaments and the Temperamental Characteristics of the Teeth in Relation to Dental Prosthesis."

Rodrigues Ottolengui, M. D. S., of "Palatal Mechanism."

All of these contributors have presented valuable and instructive articles, well deserving the careful attention and study of students and practitioners.

A MANUAL OF THE INJURIES AND SURGICAL DISEASES OF THE MOUTH, FACE AND JAWS. By John Sayre Marshall, M. D., Former Professor of Dental Pathology and Oral Surgery in the Dental Department of Northwestern University, etc. Publishers: The S. S. White Dental Manufacturing Co., Philadelphia. 1897.

The contents consist of Chapters consisting of "Surgical Bacteriology," "Inflammation," "Abscess," "Ulceration," "Necrosis, Caries and Gangrene," "Traumatic Inflammatory Fever," "Septicemia," "Pyemia," "Erysipelas," "Tetanus," "Shock and Collapse," "Ligatures, Sutures and Suturing," "Wounds and Their Treatment," "Gunshot Wounds," "Fractures of the Maxillæ," "Dislocations of the Inferior Maxillæ," "Anchylosis of the Jaws," "Necrosis of the Jaws," "Stomatitis," "Surgical Tuberculosis," Diseases of the Maxillary Sinus," "Cystic Tumors of the Maxillary Sinus," Diseases of the Salivary Glands," Neuralgia and Treatment of Trifacial Neuralgia," "Congenital Fissures of the Lip and Vault of the Mouth," "Tumors," "Tumors of the Face, Mouth and Jaws," and Retention Cysts; the whole forming a most excellent treatise on oral surgery; useful alike to the student and practitioner of both medicine and dentistry.

A long acquaintance with the author, led us to expect an admirable work on oral surgery when we first learned of his intention to prepare one, and our expectations have been more than realized. No one more competent to perform such a task than Dr. Marshall could have been selected, as his intellectual qualities and extensive hospital experience, have eminently fitted him to prepare and arrange the material of which this work is composed.

Its subjects are exhaustively as well as scientifically treated, and the work must be regarded as the best of this kind that has ever been published, and it will always remain as a standard treatise useful to all engaged in the practice of oral and general surgery.

The publishers deserve great credit for the excellent style in which the work appears, which consists of 716 pages of text illustrated by 364 engravings.

Monthly Summary.

THE ARREST OF HEMORRHAGE, even from slight wounds, in patients affected by hemophilia; is sometimes a serious problem, with not rarely a fatal solution. Beinwald has recently adopted a new plan in the case of a child, aged two years, the subject of hemophilia. Having failed to arrest the hemorrhage from a small wound on the face by the application of perchloride of iron, he obtained some blood by aspiration from a healthy subject and deposited it on the wound. In a few minutes it coagulated, and the hemorrhage at once ceased. His explanation of the action of the remedy is that it supplies the ferment necessary for thrombosis in the small vessels. Whether this is correct or not it is impossible to say in the absence of definite knowledge of the pathology of hemophilia. As affording his explanation some support may be mentioned the success obtained by Wright in his experiments with a solution of fibrin ferment and chloride of calcium as a styptic. Bienwald's ingenious method certainly deserves further trial.—*American Journal of Surgery.*

PECULIARITIES OF WOMAN.—Women pin from left to right, men from right to left. Women button from right to left, men from left to right. Women stir from left to right (their tea, for instance), men from right to left. Women seldom know the difference between a right and left shoe, and if a housemaid brings up a man's boots, she will, nine times out of ten, place them so that the points will diverge. London *Truth* inquires whether these peculiarities can be explained?

DON'T USE PLAIN TEETH in constructing artificial dentures where the rubber, either pink, red or black, will show. If you have difficulty in making perfect joints with gum sections, then follow these directions—viz. : Grind the joints upon a large, true-running corundum wheel, making the fitting close front and back. Before investing, cover the front surface with cement and allow one hour to harden. Let the case, after investing, remain over night before packing, so that the plaster will become thoroughly set, and then proceed to pack without a surplus of rubber. If it is not possible to let the case remain over night before packing, then grind the inner half of the joints to a V shape, and fill with oxychloride of zinc, allowing one hour for hardening before packing.—*Western Dental Journal.*

SINS.—By Dr. Emory Laughlin.—First Sin—Operating on Hopeless Cases.—There are some—and they are called surgeons—who will undertake almost any kind of an operation, regardless of the prospects of cure or failure, nay, even of life or death; and sometimes without consideration of the question of their ability to do the work properly.

The incentives are ; (a) to get a good fee; (b) to have the credit of operating, especially in rare or difficult cases; (c) to obtain control of the influential patient from a conservative physician, who, recognizing the hopelessness of the case, is doing all he can to ameliorate suffering and prolong life, but persistently refuses entreaties of patient and friends to 'do something'; (d) ignorance of real condition.

Second Sin—Pretending to be Clean, but Failing.—Every one now knows the inestimable value of asepsis; most surgeons pretend to practice it; nearly all failed. The clean (ideally, surgically, truly clean) surgeons of America do not number a dozen ! I know them—I mean the leaders of the profession, not the hewers of wood and tillers of soil, not the common, every-day workers like you and me, but the men to whom we look for guidance. One point of failure is dirty finger nails. Lawrence Tait's remark, that 'The high mortality rate in abdominal surgery found in the work of German surgeons is easily accounted for—they don't clean their finger nails,' is applicable to the methods of some surgeons not Teutonic.

Third Sin—Undercharging, in Order to Secure an Operation.—That is a sin too often committed by men who stand high in the profession; and this assertion is no idle figment of the imagination, either.

Fourth Sin—Stealing Patients from Other Surgeons.—This is more often the cause of hard feelings between surgeons than any other one thing, though, as it is done usually in such a genteel, 'ethical' way, there is no recourse left to the injured party, except to growl.—*Journal of Surgery.*

THE NEW DENTAL LAW in Pennsylvania has this wise provision, viz: "Each applicant shall also furnish to the board satisfactory evidence of his or her proficiency in the manipulative procedures of dentistry, either by producing an example of his or her work, duly attested by the demonstrator in charge of the clinic of the college issuing his or her diploma, or by a practical demonstration of his or her skill in the presence of the examining members of said board."

LACTIC ACID IN PYORRHŒA.—Dr. W. J. Younger says that the excoriation of the mouth and gums may be prevented by the application of the oleo-stearate of zinc to exposed surfaces which it is desired to protect against its action, when lactic acid is used in pyorrhœa.

THE DENTAL STUDENT who is neat, clean, and well-behaved, who gives respect to his teachers and their teaching, is the man who will win success, and upon whom the future success of the profession must always depend.

The lady was a neutral in politics, but not a bit behind in her knowledge of the issues of the late campaign. She remarked : "Doctor, if you'll not regard it dictatorial on my part, I'd suggest that you McKinleyize this tooth and merely Bryanize the molar. The latter's out of sight, you know, and no one will ever be the wiser."

"Beg pardon ?"

"You mean you don't understand me ? Why, crown this tooth with gold, and transfix that one with silver,—amalgam I think some of you gentlemen call it."—"Odontographic Journal."

Small boy patient : "Doctor, do you know the commandments ?"

Doctor : "Yes."

"Repeat 'em."

Doctor repeats.

"What's the other ?"

"There is no other."

"Yes."

"What is it ?"

The 11th : "Thou shalt not rubber stretch thy neck."

SAID a patient who had worn an arsenical dressing several hours with great discomfort and returned for at least temporary relief : "Doctor, that tooth aches like the devil."

"That's right."

"Oh, is it ?"

"Yes."

"Thanks ! I felt a bit anxious about it; good-day."—*Odontographic Journal.*

A NEW WART CURE.—Chromic acid, one hundred grains to the ounce, applied frequently with a tooth-pick, will remove small warts or similar growths.

DIAMOND DRILLS, HOW TO USE.—A writer in *Ash's Quarterly* says: "In using a diamond drill for making cavities in artificial teeth, it is most important to bear in mind that the point should be dipped in sweet oil or water, *and placed on the work before the engine is started.* The engine should be stopped as often as the drill shows signs of becoming dry, and each time after it has been dipped in the lubricant it must again be placed on the work before the engine is started. It is, perhaps, needless to add that the hand-piece must be held firmly and steaily in position to insure success and to avoid breaking the drill."—*Catching's Dental Weekly.*

TO CLEAN and otherwise improve the working qualities of an oilstone, smear a flat block of wood with glycerine and fine pumice and rub the stone, face down, till all traces of previous usage have disappeared. To ruin an oil stone, clean it with kerosene. Its hardness will then rival Pharoh's nipples.—"Odontographic Journal."

TO KEEP SPITTOON CLEAN.—Mr. A. W. Wright, Jr., of London, finds that a little sulphate of copper sprinkled inside the spittoon (metal or earthenware) before the day's operations commence, prevents any unpleasant odor, does not allow the interior of the spittoon to become furred, and renders it much easier to cleanse than usual.—"Ash's Circular."

IT is a mistake to begin to prepare and fill teeth before removing salivary calculus and stains. No operator can tell the requirements of a case till the surfaces of the teeth are bright and free from discoloration, so that the line of demarkation between the normal and the diseased tissue may be clearly observed.--T. W. Brophy, in "Review."

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ARTICLE I.

INSENSIBILITY TO PAIN.

An interesting point has been brought out in a discussion of the dental section of a medical association on cataphoresis. Cataphoresis is the most modern method of causing the tooth and gums or any part of the body to become insensible to pain. The ordinary method of its exhibition is to saturate a piece of cotton with cocaine and apply the cotton containing electrode to the part to be influenced, a weak electric current being turned on in the meantime. In from one and a half to ten minutes the part becomes "obtunded," or benumed.

A dentist who took part in the discussion said that he had held back—much to the surprise of some of his professional brethern—from the active recognition of cataphoresis in dentistry, and he would now enlighten the association as to his reasons for doing so. The extraction of teeth by electricity was common as far back as 1856, but the real cause of any merit in that method was that the shock produced at the instant the forceps were applied produced a diversion of the will force by causing a sudden and violent inhalation into the lungs. While the lungs remained inflated the effect was excellent, for the senses were for the instant submerged or subjugated. He discovered that the actual insensibility to pain arose from the sudden inhalation of air, and thenceforth abandoned the use of electricity and depends upon rapid breathing alone. In conclusion, he said to his confreres: "You now know why I abandoned electricity for obtunding sensitive dentine and for extracting, for this revelation of how nature relives gave me the clue to the brighter step which dentists have been slow to recognize as a fact. Had you done so, then you would not today be looking for any other agent in most of the cases that it is our lot to have."

Subsequently another practitioner stated that he had made frequent use of the rapid breathing method to obtund pain for some 16 years, and he thought if the real effort of rapid breathing were better understood it might have a wider application than in dental practice. There are many ways in which a state of disordination of the nerves of feeling may be produced so that they will not carry the sensation of pain to the brain, and thus produce anæsthesia. The way quick breathing acts seems to be by diverting the attention from the operation to the effort to breathe quickly. In hipnotism sleep is caused by occupying the patient's attention, and thus disordering the centres of mentality and the centres of sensation, so that they do not work together. A case is reported of tumor operation in which the man was made to hold the surgeon's hand and maintain constant pressure. This will make anyone tired, and the effort diverted the attention of the patient from the pain of the operation so fully that the tumor was removed by ligation without any pain being felt, and without the loss of consciousness at any time. All that seems necessary is to fix the thoughts of the patient closely on something else while the pain lasts. This answers very well when the tooth can be drawn instantly, but if this or any other operation has to be prolonged, there is no question that cataphoresis is the surest, simplest, and best method known of securing insensibility to pain.—*Pittsburg Dispatch.*

ARTICLE II.

THE ENTRANCE EXAMINATIONS IN DENTAL COLLEGES.

Too severe criticism made upon the actions of the National Association of Dental Faculties, rescinding their decision made at Saratoga, 1896, and substituting a lower standard at Old Point Comfort the present year, have apparently a substantial basis. It is however very clear that this action is not understood; and while it would seem to be a retrograde movement, it is not so in any sense, but rather a conservative effort to reach even a higher standard, but not by the ill-considered methods adopted in 1896.

The history of the efforts to advance the standard of preliminary training, as well as the curriculum of each of the dental colleges, has never been written, and probably never will be, but there has been a continued effort in the Association of Faculties for many years to increase the requirements, but at the same time arrange these so as to avoid undue friction with the elements with which it was forced to deal.

The primary object of this body is to advance the character and the work of all the dental schools; and in order to do this each must be a mutual help to the other, bearing, to a certain extent the burdens of the weak, and discouraging the strong in any attempts to move faster than the former could safely follow.

In the present condition of our country it is recognized that dental colleges cannot all be of equal value, and it is equally apparent that the dependence upon some few centres of education, as was formerly the case, must be abandoned. The growth and necessities of the people of each State will eventully tend to a concentration of effort for the upbuilding of the State in all directions, and thus give its own citizens the advantage of home instruction. The time was when the medical schools of Philadelphia and New York were patronized by students from all parts of the United States. To a large extent this continues, but the difference between the past and the present is marked, so much so that while the number of matriculates has steadily increased, the number from outside states and territories has regularly diminished, leading to the remark of a distinguished teacher of surgery, "That the medical colleges of Philadelphia were becoming local institutions," meaning by this that the students were mainly derived from Pennsylvania.

The reasons for this change must be self-evident, and it is not necessary to enlarge upon them. States as well as individuals grow out of their swaddling clothes, and will, sooner or later, demand an independent position; and as there is no monopoly of knowledge, or the power of imparting it, new colleges have sprung up over the land covering all departments of human intelligence.

While this is true and a cause of congratulation, it is equally true that many of these newly formed colleges are not State institutions, and are relatively weak, from lack of proper endowment. They begin largely as simple dental schools, and although chartered as dental colleges, with all the legal rights attached thereto, they are financially weak, and it becomes with them a struggle for existance.

It may be said by the critical that this means that they ought to die. This is not the view of the writer. There is not a dental school in existance to-day that has not gone through all the phases connected with a struggle upward, not excepting even those connected with universities; and, besides outside of our large cities, these new colleges are needed, especially in the South and the far west, and every encouragement should be given these until they have finally laid their foundations strong enough to resist all destructve elements. It may be said, and with truth, that there is a limit to this multiplication of colleges, and that the Association of Faculties cannot forever be dragging the older institutions in the mire, in order to save these weaklings. It is true that there is a limit beyond which it will not be safe to go, and that limit is very nearly reached. When this time comes there will be no new colleges admitted as members, except they demand a standard equal to the best. In the mean time the dental colleges connected with universities, and those not so connected, but firmly established, can formulate their own standard; and thus set an example by demonstrating that a dental college can make its own te ms and gain in respect the patronage by so doing. This has become a recognized fact in the dental and medical departments and in higher colleges, so much so that it has become almost axiomatic that the higher the standard the larger the number of students.

When the National Association of Dental Faculties adjourned last year 1896, it was with the comfortable feeling that the entrance examination had been raised to that of freshman year in a high school. The final preparation of this was given to a committee to formulate and print in the Proceedings. This committee contained one gentleman of large experience in educational matters, but who was not a member of the Association of Dental Faculties. This training fitted him for general educational work, but naturally he could not comprehend the needs of the profession, and especially so recent a developement as dentistry. The result of the work of the committee was a series of rules in which applicants for matriculation were required to reach a certain standard, and this was minutely detailed. When the report was published it was at once recognized that this was not what the National Association of Faculties had ordered; in fact it was in excess of anything anticipated when authority was given the committee. The publication created general disturbance in college circles, for it was felt that the rules could not be carried out in the present existing condition of dental education.

When the "Faculties" met at Old Point Comfort, the first thing that confronted the delegates was a determined opposition to these formulated rules, and this became so pronounced that nothing was left for the Association to do but to endeavor to retain the position of previous years of a standard equivalent to that required for entrance to a high school. It is very questionable whether this can be rated in the near future, but there is nothing to prevent individual dental colleges from advancing the entrance examinations to suit themselves.

The charge that the National Association of Dental Faculties took a backward step in 1897 is not true. It simply adopted, in plain terms, what it presumed had been adopted the previous year. The lessons learned was that it was never safe to leave any subject in the hands of a committee that requires the critical care of the entire body. Upon this rock many associations have gone to pieces, and that the Association of Faculties was safely landed in deep water without special injury is a cause of congratulation.

This conclusion has, however, no permanent features. The Association cannot afford to occupy this low position for any great length of time, and it becomes the duty of all dental colleges intrinsically weak to remember that this adjustment is only temporary, and that the stronger colleges cannot and will not much longer bear the burdens of the weak, but will insist that those who have sought fraternal association must continually struggle to meet the higher standard demanded by the increased intelligence and broader education in the scholarly circles of the world.—EDITORIAL IN *International Dental Journal.*

ARTICLE III.

THE POSSIBILITIES OF PROSTHETIC DENTISTRY.

BY E. J. PERRY, D. D. L., CHICAGO, ILL.

Read before the Northern Illinois Dental Society Rockford, October, 1897.

A consideration of the possibilities of prosthetic dental art might lead one to the discussion of impracticable ideas, but then the question comes back to what extent are ideas impracticable? This society must and is intended to deal with practical things. My friends, the practical in this world and in our chosen field must come nearer to the ideal. There Should not be such a wide interval between ideal and practical excellence, but a perfect and harmonious blending of both qualities. A conscientious study of prosthetic dental art will be found to require, in order to attain the esthetic and the useful without sacrificing one to the other qualities of mind not common to the artisan. A creative quality of mind is indispensable to the construction of a full denture. A person with edentulous jaws is in a sorry plight. He is indeed unfortunate. The features are changed and distored. The brilliancy of the beauty of the face devine is gone. His digestion impaired; his days shortened. To whom shall he go? To the dental mechanic? No, but alas, he has no other place where he can go. Why don't the profession take this unfortunate person's case to heart? Who is to blame that so many persons wear false teeth, and so few wear artificial ones? Is the person so afflicted or the profession? The profesion is to blame. Let us go back a few years. Let us be reminiscent for a time. We will see, I think, wherein lies the cause. When your essayist began to study dentistry, the metals, gold, silver and platinum, where jnst packing their trunks in disgust and preparing to leave the laboratory. I was introduced in the most formal way, and away they went. Vulcanite had run them out where for long years they had held full sway. My preceptor served four years' apprenticeship in the laboratory alone, I served one year, then went to college. What did I find in the laboratory there? Vulcanite was supreme. Gold and silver and platinum had gone, and no one was left to speak of their good qualities. Their biographies were read, that was all. Where was the unfortunate individual with the edentulous jaws. He was steered up against Mr. Vulcanite. His predecessors in trouble had been taught by the former knights of the laboratory to pay handsomely for services rendered. Hence it was easy to get a big price for vulcanite, and the work quickly done. Then came in the Barbarians and the Philistines, and competition ran down the price. The best men went into the operating room and the breach between the two widened. This was the state of affairs up to the advent of modern crown and bridge work. Now the future looks bright. The metals with their bright faces have forced terms with the despot vulcanite and the operator, however high his dignity, can sometimes be found in the laboratory, and to my optimistic vision the possibilities of prosthetic dental art are indeed ranging into the realm of real probabilities. Much is to be done. Line upon line and precept upon precept are to be written. We must begin at the societies and colleges.

Ability of a high order is coming into the laboratory, the electric furnace, electric lathe, the various methods of making crown and bridges and dentures and the facination of the dental ceramic art are forcing up the standard of prosthetic work. Crown and bridge work have lifted into the free air and pure sunshine the banner of prosthetic dental art. It has washed up the benches and cleaned up the laboratory, so that its dingy walls and disgusting filth are no longer its distinctive features. But instead, the laboratory is neat and clean, artistic and convenient in arrangement and altogether in a first class office the most facinating place in which to work. The metals have done this. Ceramics are now, and are in the future to cut a large figure in dental practice. They exact of its servants neatness and methodical precision. Crown work of any sort exacts of the dentist not alone mechanical excellence, but artistic conseption, ingenious and creative skill, esthetic tastes, and the discriminating power of application. The importance of prosthetic dental art to humanity is forcing itself into the heart and mind of the profession. Not the artisan, but the artist, the doctor, the dentist, who combines in one brain case all these in one. He is thinking, and the aforesaid unfortunate person with toothless and expressionless face is being steered up against a very different proposition. Doubtless the almighty dollar has a finger in this pie and is an important factor in the case, but no matter, the results are the same, and the credit is not discounted. I say to you if per chance you are here, you who extract aching or devitalized teeth, you who recommend rubber as the best base for artifical teeth, or you lily fingered operators who never do any plate work, who do not go into the laboratory except to smoke or black your boots, who have laboratories only for the storage of filth, soiled towels, cast-off clothes and broken furniture; I say to you whoever you are or where, look to your laurels the new day has dawned; the triumphal car is coming; an exacting public will disown you, and if you should fall you would be trampled on and you cannot see the procession for dust. Go from this meeting ye who fall under this description and clean up your dark and filthy laboratories; put in neat appliances and modern apparatus; get in line of progress make your own crown and bridges; get hold of porcelain; catch on to ceramics; stop putting in those ready made hand me down crowns; get some works on metallurgy and ceramics; give not the hours after you have done a day's work in the operating room, but of your best time and best thought; begin by urging those who can pay to have continuous gum or gold work and their number will grow.

But you must believe what you say and you must be able to do the work. You cannot hire it done; you can hire an artician, but you will never in this life succeed until you thoroughly master the subject yourself. You cannot even hire it done properly till you can do it yourself. You must be the designer, the creator. You must possess the whole case; you must be the sole master and what you can accomplish will bring to you great joy. The profession must bring this to the great common man. How can it be done? How can the common man be made to appreciate artistic prosthetic dental art? Certainly the first requisite in the matter must be a thorough practical knowledge and appreciation of the artistic in prosthetics on the part of the dentist himself; it must be a conviction with him, it must come from the heart and head both; he must be able to see the beauties and the utilities of his work ahead of his patient; when he says to his toothless patient a continuous gum set is best, he must have a better reason in his mind than he thought he is rich and can pay for it. The most of our patients, or at least a goodly number can pay for continuous gums if they are convinced that it is infinitely better for them in whatever way considered. No dentist who is an artist in prosthetic work would himself wear a rubber plate for a full denture. I know patients who would take in washing if need be to get a continuous gum work. This work must be done by the dentist; if he cant do it or sends to the laboratory man an occasional set for some rich patient, he gets back a continuous set less the art The case does him little good or possibly the patient either, so the whole matter rests with the dentist. He is timid; he is stingy; he is lazy; he is ignorant; he is incompetent; he lacks enterprise; he is not honest; some of these or all of them he is or the people who look for better things would have them. The profession as a whole is to blame for whatever lack of true art there may be in prosthetic work of to-day. You say the people are looking for a cheap thing. This is not true. They are looking for the best as much as ever. You have nothing but a cheap thing to offer them. The dentist himself is the most important factor in raising the standard of professional excellence in a community. The people will not force up the standard for him, but they will recognize and support him by an intelligent appreciation of every effort he may rightly make to elevate and ennoble his profession.

Merit, art, skill, industry and professional excellence do not go unrewarded. Did you ever think how few sets of teeth you have made and inserted that were just right. and how rarely a good piece of work of any sort went unrewarded? Have you so much conceit as to think you cannot be outdone in prosthetic work, either in its design, or its mechanical perfection? Do you think the standard is already up, or don't you think it will pay you to hoist it? Let us briefly consider a few points of advantage which lie in the way of say gold for partial sets, or continuous gums for full plate. No one who ever wrote on the subject but emphasizes the fact that a plate covering the tissues for the purpose of carrying artificial teeth should be a good conductor of thermal changes. Here, then, rubber is contraindicted. Gold, platinum or porcelain therefore are indicated. The material of the plate should also possess the greatest possible strength in the least possible space. Again, rubber fails to fill the requirements of the case, the metals do not. The material of the plate should also be pure and non-oxidizable. Here rubber fails also and twenty karat gold highly finished and triple plated for the partial set and pure platinum and porcelain for the full fill all the requirements of the case to perfection. In continuous gum work the artist has the largest possible liberty in the arrangement of the teeth with exact reference to the artistic requirements of the case, using art to conceal art. He cannot do this with any possible means with rubber. Perhaps one of the most important points gained in continuous gum is in the gum.

Arrange teeth in continuous gum work as you may, they look infinitely better than the same arrangement in rubber. One might pass, the other be simply hideous. The advantages of a correct occlusion are easily obtained also in continuous gum for the metal plate can be used after the pins are soldered to the plate and a gum colored wax used, and not only an absolutely correct occlusion but a study of the restoration of the lost expression can be made in the mouth in a way not possible under any other circumstances. In partial sets the plain plate teeth can be tipped with gold as are facings in crowns and bridges, thus securing durability and strength, either the adhesion plate or broad clasps can be used and in some cases the Condict fastenings are incomparable. Bridge work has lessened the number of partial sets and often the four incisors can be carried in this way, not on two cuspids however. It is not my purpose to detail any method. The discussion ought to bring out much detail. My purpose is to awaken you to the important fact that the prosthetic half of dentistry is to take its rightful place and the results that are possible you are to assist in realizing.

I want you to realize what the possibilities of prosthetic dental art are. What the forces are that are working out a higher destiny for it. Just turn your studies into this channel.

One more word. In some quarters I hear that teachers encourage the separation of the two great branches, operative and prosthetic dentistry. A further specialization of dentistry! An eminent teacher told me that prosthetic dentistry should not be taught in dental colleges, or at least, no attempt made to finish men for practice. A special school for this work, that the practitioner should do only operative or prosthetic work. I cannot see how any one can so argue. Where we are lame is in the fact that the colleges do not properly fit men to practice prosthetic art, and the practitioner does not spend enough time or study in the laboratory. There is too much specializing. Men do not grow symetrically in practice. They advance as they think in the groove in which they work, and when men get into a groove as the years go by, that groove gets narrower and the man resembles the groove. A further specializing will destroy the profession. The prosthetic man must work in the mouth and when he grows in this work of prosthetic dental art look for a growth in his operative work also.—*Dental Review.*

ARTICLE IV.

TREATMENT OF ABSCESS.

BY DR. MONROE, FLINT, MICH.

It is not so many months ago that I have ceased to remember with pleasure the last dental convention I attended.

I recall to mind with a great deal of satisfaction the benefits which I received, in the way of personal experience, related by members of that convention.

From the narration of more than one of these experience, I received suggestions which are of great benefit to me in my every-day practice.

It has been my fortune to have some experience in a certain line of work, which is attracting no little attention at present in our dental journals. While I cannot hope that I am telling you anything new, I must at least hope to succeed in interesting you to a limited extent.

Two years ago a gentleman about 45 years of age came into my office and said: "I have some teeth that trouble me. They have been troubling me for over a year. I have been in two offices during that time and they had started to treat them, but it hurt so badly that I have never went back to either of them for a second treatment. I don't want to be hurt; I would prefer the toothache rather than to suffer pain in a dental chair."

Most of his posterior teeth had been extracted under an anæsthetic, and he was depending largely on his anterior ones for mastication. The troublesome tooth was the left cuspid superior, which was slightly raised in its socket, and a little loose. The lateral and central incisors next to it were also devitalized.

Knowing that I would probably not be able to get him in the chair for a second treatment, I determined to try to make it a clean operation at one sitting.

I opened all three teeth through their root-canals, wiped out all the pus I could press out through the canal of the cuspid, washed it out carefully with warm, carbolized water, forced carbolic acid and iodine, equal parts, into the pus cavity, and filled it with chloro-percha and gutta-percha and gutta percha points. I then cleaned out the canals of the central and lateral, sterilized them, and filled them in the same way. I told him that they would probably trouble him for a day or so, but after that they might never bother him.

I met him on the street in a few days, and he said that the night after the treatment he slept little or none at all. The gum had swollen and burned, as he explained it, but they were then allright. In about two months from that time I put in permanent fillings and they have not troubled him since. I had occasion to treat the lingual root of a superior right second molar, which would have been almost impossible to open through the palatal side, in the same manner as the case above mentioned, with the same results, a little more than a year ago. Yet, on account of the trouble following, I have never followed this for a practice, and, in fact, have extracted molars in preference.

Prior to and since that time I have treated similarly affected teeth by cleaning out the root-canals, through the apex of the root, by using Gates' glidden drills, if necessary, or even a 50 per cent. solution of sulphuric acid. Then, after injecting about a 1½ per cent. solution of cocaine to a mixture of tincture of iodine, carbolic acid, sulph. morphia, atropine sulph. (pot. iod.), glycerine and water into the gum, over the apex of the root, which renders the gum entirely painless, lance the gum in the form of a cross, and with a large, round, sharp bur drill through the process, completing this work with a sharp fissure bur, with which it is an easier matter to cut off the end of the root or drill out any diseased bone in the pus-cavity. The small particles of process and tooth are now washed out, first with warm carbolized water, then with peroxide of hydrogen, followed by carbolic acid and iodine, equal parts, forced through the canal and out through the fistula, leaving a thread of cotton saturated in carbolic acid and iodine in the canal, with another similar one in the fistula. The after-treatment consisted in simply washing out the cavities with perovide of hydrogen, unless the pus continued to form, when the first operation would be repeated. Sometimes a cure would be brought about after the first treatment, and again, after two or three months' treatment, the tooth would have to be extracted.

At the time of our last convention in Grand Rapids, I had a right superior central incisor that I had been treating in this way for about two months, with no hope of success. I consulted several of the doctors present in regard to it and received as many different replies. As they all had some failures, I concluded that I would have to extract it. But before doing so I cleaned it out thoroughly, sterilized it well through the canal and fistula and filled the canal permanently, after I had thoroughly dried it with tannic acid and cotton. The patient remarked that the tooth felt better than it had at any previous treatment. Every few days I would wash out the fistula, which remained open of itself, due to the purulent discharge that had no other avenue of escape, with warm, carbolized water, and inject a few drops of tincture of iodine into the pus-cavity. In a short time the opening healed up and has since caused no trouble.

Since that time I have been filling the root-canals of abscessed teeth at the first sitting, after the opening has been made through the process and the pus-cavity thoroughly burred out and cleansed. I fail to see of what benefit it is to leave the root and canal unfilled. To my mind, it would be as easy to treat a chronic case of appendicitis through the oral cavity as to treat a chronic abscessed tooth through the root-canal. When we thoroughly clean out a root-canal, open well through the apex to the fistula, we have, in my opinion, done all we can through that channel. It is better to fill it at once, and the fistula will allow any pus to escape that might otherwise be enclosed. Should any pus form afterward, it is evident that we have a diseased tooth to drill out, which can be reached only through the fistulous opening. That we have a diseased tooth and not process is proven by the fact that when we extract an abscessed tooth, the cavity left generally heals up in a few days, causing no further trouble. After cutting off the end of the root, we have the diseased portion extracted, and the cavity, represented by the fistula, equals the cavity made where the tooth was extracted.

This is the way I, with my limited experience, view the matter, and if my views are mistaken or exagerated, my heartfelt thanks will be given to him who shows me wherein I have erred.

DISCUSSION.

Dr. Williams.—I would like to know if it would not be of more benefit to leave the canal open instead of filling it permanently. I fill it with cotton, which is not so difficult to extract as gutta percha.

Dr. Monroe.—I do not think it necessary to remove the filling. The difficulty would be at the root or in the process. I think a tooth can be over-treated. The point I wished to make was that of filling the tooth at the first sitting.

Dr. House.—I would like to ask Dr. Monroe if that pertains to teeth where the pulp has become devitalized, where it has decomposed, where the pulp is dead, or where it is absorbed entirely. We often find teeth where the pulp is devitalized and the flow of pus difficult to arrest. Also cases where the pus is absorbed and we have a dry condition to act upon.

Dr. Monroe.—I had a case yesterday of that kind, which I am to extract. I should treat it at first, for the reason that it is sore. It is a left lateral incisor and there is a hard lump under the eye. I believe in that case it would be better to wait It would be easier for the patient. But in the case of the tooth being either dry, or pus coming through the root-canal, clean it out thoroughly and sterilize; if blood or serum continues through the canal, use tannin and cotton. Sometimes it will take an hour and a half to dry and fill it. In the case to which I referred, the patient said the tooth felt all right. The fistula is still open.

Dr. Warboys.—I would like to ask Dr Monroe if he has ever had a recurrence of an abscess after that kind of treatment after he considered it entirely healed up ?

Dr. Monroe.—More often than otherwise. Even after cutting off a portion of the root.

Dr. Young.—I have always considered it best to fill the tooth before cutting off the root, because after cutting it off you must have a larger opening, and it is more difficult to fill on account of pushing the filling farther than you wish it to go. I think a permanent filling helps to force the pus out.

Dr. Morgan.—I have claimed for a long time that it was impossible to make a lower molar healthy after once diseased. I have met with better success if, after opening into the root, I had used a hot instrument at once before washing. I have always been very careful not to drill through the end of the root. If an upper front tooth, usually the opening at the end of the root is large enough to force the medicine through without drilling.

Dr. Monroe.—I have found oftentimes that by drilling through the tooth, getting a circuit through the fistulous opening and root-canal, and after drying thoroughly and filling, that the fistula would heal itself.—*Dental Register.*

ARTICLE V.

THE CENTURY'S PROGRESS IN CHEMISTRY.

BY HENRY SMITH WILLIAMS, M. D.

Small beginnings have great endings—sometimes. As a case in point, note what came of the small original effort of a self-trained back-country Quaker youth named John Dalton, who along toward the close of the last century became interested in the weather, and was led to construct and use a crude rain-gauge to test the amount of the waterfall. The simple experiments thus inaugurated led to no fewer than two hundred thousand recorded observations regarding the weather, which formed the basis for some of the most epochal discoveries in meteorology, as we have seen. But this was only a beginning. The simple rain-gauge pointed the way to the most important generalization of our century in a field of science with which, to the casual observer, it might seem to have no alliance whatever. The wonderful theory of atoms, on which the whole gigantic structure of modern chemistry is founded, was the logical outgrowth, in the mind of John Dalton, of those early studies in meteorology.

The way it happened was this : From studying the rain-fall, Dalton turned naturally to the complimentary process of evaporation. Hr was soon led to believe that vapor exists in the atmosphere as an independent gas. But since two bodies cannot supply the same space at the same time, this implies that the various atmospheric gases are really composed of discrete particles. These ultimate particles are so small that we cannot see them—cannot, indeed, more than vaguely imagine them—yet each particle of vapor, for example, is just as much a portion of water as if it were a drop out of the ocean, or, for that matter, the ocean itself. But again, water is a compound substance, for it may be separated, as Cavendish had shown, into the two elementary substances hydrogen and oxygen. Hence the atom of water must be composed of two lesser atoms joined together. Imagine an atom of hydrogen and one of oxygen. Unite them, and we have an atom of water; sever them, and the water no longer exists; but, whether united or separate, the atoms of hydrogen and of oxygen remain hydrogen and oxygen and nothing else. Differently mixed togethor or united, atoms produce different gross substances; but the elementary atoms never change their chemical nature—their distinct personality.

It was about the year 1803 that Dalton first gained a full grasp of the conception of the chemical atom. At once he saw that the hypothesis, if true, furnished a marvelous key to secrets of matter hitherto insoluble—questions relating to the relative proportions of the atoms themselves. It is known, for example, that a certain bulk of hydrogen gas unites with a certain bulk of oxygen gas to form water. If it be true that this combination consists essentially of the union of atoms one with another (each single atom of hydrogen united to a single atom of oxygen), then the relative weights of the original masses of hydrogen and of oxgen must be also the relative weights of each of their respective atoms. If one pound of hydrogen unites with five and one-half pounds of oxygen (as, according to Dalton's experiments, it did), then the weight of the oxygen atom must be five and one-half times that of the hydrogen atom. Other compounds may plainly be tested in the same way. Dalton made numerous tests before he published his theory. He found that hydrogen enters into compounds in smaller proportions than any other element known to him, and so, for convenience, determined to take the weight of the hydrogen atom as unity. The atomic weight of oxygen then becomes (as given in Dalton's first table of 1803) 5.5; that of water (hydrogen plus oxygen) being of course 6.5. The atomic weights of about a score of substances are given in Dalton's first paper, which was read before the Literary and Philosophical Society of Manchester, October 21, 1803. I wonder if Dalton himself, great and acute intellect though he had, suspected, when he read that paper, that he was inaugurating one of the most fertile movements ever entered on in the whole history of science?

Be that as it may, it is certain enough that Dalton's contemporaries were at first little impressed with the novel atomic theory. Just at this time, as it chanced, a dispute was waging in the field of chemistry regarding a matter of empirical fact which must necessarily be settled before such a theory as that of Dalton could even hope for a hearing. This was the question whether or not chemical elements unite with one another always in definite proportions. Berthollet, the great co-worker with Lavoisier, and now the most authoritative of living chemists, contended that substances combine in almost indefinitely graded proportions between fixed extremes. He held that solution is really a form of chemical combination—a position which, if accepted, left no room for argument.

But this contention of the master was most actively in particular by Louis Joseph Provost, and all chemists of repute were obliged to take sides with one or the other, For a time the authority of Berthollet held out against the facts, but at last accumulated evidence told for Proust and his followers, and toward the close of the first decade of our century it came to be generally conceded that chemical elements combine with one another in fixed and definite proportions.

More than that. As the analysts were led to weigh carefully the quantities of combining elements, it was observed that the proportions are not onl definite but that they bear a very curious relation to one another, If element A combines with two different proportions of element B to form two compounds, it appeared that the weight of the larger quantity of B is an exact multiple of that of the smaller quantity. This curious relation was noticed by Dr. Wollaston, one of the most accurate of observers, and a little later it was confirmed by Johan Jakob Berzelius, the great Swedish Chemist, who was to be a dominating influence in the chemical world for a generation to come. But this combination of elements in numerical proportions was exactly what Dalton had noticed as early as 1802, and what had led him directly to the atomic weights. So the confirmation of this essential point by chemists of such authority gave the strongest confirmation to the atomic theory.

During these same years the rising authority of the French chemical world, Joseph Louis Gay-Lussac, was conducting experiments with gases, which he had undertaken at first in conjunction with Humboldt, but which later on were conducted independently. In 1809, the next year after the publication of the first volume of Dalton's "New System of Chemical Philosophy," Gay Lussac published the results of his observations, and among other things brought out the remarkable fact that gases, under the same conditions as to temperature and pressure, combine always in definite numerical proportions as to volume. Exactly two volumes of hydrogen, for example, combine with one volume of oxygen to form water Moreover, the resulting compound gas always bears a simple relation to the combining volumes. In the case just cited the union of two volumes of hydrogen and one of oxygen results in precisely two volumes of water vapor.

Naturally enough the champions of the atomic theory seized upon these observations of Gay-Lussac as lending strong support to their hypothesis—all of them, that is, but the curiously self-reliant and self-sufficient author of the atomic theory himself, who declined to accept the observations of the French chemist as valid. Yet the observations of Gay-Lussac were correct, as countless chemists since then have demonstrated anew, and his theory of combination by volumes became one of the foundation-stones of the atomic theory, despite the opposition of the author of that theory.

The true explanation of Gay-Lussac's law of combination by volumes was thought out almost immediately by an Italian savant, Amadeo Avogadro, and expressed in terms of the atomic theory. The fact must be, said Avogadro, that under similar physical conditions every form of gas contains exactly the same number of ultimate particles in a given volume. Each of these ultimate physical particles may be composed of two or more atoms (as in the case of water vapor), but such a compound atom conducts itself as if it were a simple and indivisible atom, as regards the amount of space that separates it from its fellows under given conditions of pressure and temperature. The compound atom, composed of two or more elementary atoms, Avogadro proposed to distinguish, for purposes of convenience, by the name molecule. It is to the molecule, considered as the unit of physical structure, that Avogadro's law applies.

This vastly important distinction between atoms and molecules, implied in the law just expressed, was published in 1811. Four years later, the famous French physicist Ampere outlined a similar theory, and utilized the law in his mhthematical calculations. And with that the law of Avogadro dropped out of sight for a full generation. Little suspecting that it was the very key to the inner mysteries of the atoms for which they were seeking, the chemists of the time cast it aside, and let it fade from the memory of their science.

This, however, was not strange, for of course the law of Avogadro is based on the atomic theory, and in 1811 the atomic theory was itself still being weighed in the balance. The law of multiple proportions found general acceptance as an empirical fact; but many of the leading lights of chemistry still looked askance at Dalton's explanation of this law. Thus Wollaston, though from the first he inclined to acceptance of the Daltonian view, cautiously suggested that it would be well to use the non-committal word "equivalent" instead of "atom;" and Davy, for a similar reason, in his book of 1812, speaks only of "proportions," binding himself to no theory as to what might be the nature of these proportions.

At least two great chemists of the time, however, adopted the atomic view with less reservation. One of these was Thomas Thomson, professor at Edinburgh, who in 1807 had given an outline of Dalton's theory in a widely circulated book, which first brought the theory to the general attention of the chemical world. The other, and even more noted advocate of the atomic theory, Johan Jakob Berzelius. This great Swedish chemist at once set to work to put the atomic theory to such tests as might be applied in the laboratory. He was an analyst of the utmost skill, and for years he devoted himself to the determination of the combining weights, "equivalents," or "proportions" of the different elements. These determinations, in so far as they were accurately made, were simple expressions of empirical facts, independent of any theory; but gradually it became more and more plain that these facts all harmonize with the atomic theory of Dalton. So by common consent the proportionate combing weights of the elements came to be known as atomic weights—the name Dalton had given them from the first—and the tangible conception of the chemical atom as a body of definite constitution and weight gained steadily in favor.

From the outset the idea had the utmost tangibility in the mind of Dalton. He had all along represented the different atoms by geometrical symbols—as a circle for oxygen, a circle enclosing a dot for hydrogen, and the like—and had represented compounds by placing these symbols of the elements in juxtaposition. Berzelius proposed to improve upon this method by substituting for the geometrical symbol the initial of the Latin name of the element represented—O for oxygen, H for hydrogen, and so on—a numerical coefficient to follow the letter as an indication of the number of atoms present in any given compound. This simple system soon gained general acceptance, and with slight modifications it is still universally employed. Every school boy now is aware that H2 O is the chemical way of expressing the union of two atoms of hydrogen with one of oxygen to form a molecule of water. But such a formula would have had no meaning for the wisest chemist before the day of Berzelius.

The universal fame of the great Swedish authority served to give general currency to his symbols and atomic weights, and the new point of view thus developed led presently to two important discoveries, which removed the last lingering doubts as to the validity of the atomic theory. In 1819 two French physicists, Dulong and Petit, while experimenting with heat, discovered that the specific heats of solids (that is to say, the amount of heat required to raise the temperature of a given mass to a given degree) vary inversely as their atomic weights. In the same year Eilhard Mitscherlich, a German investigator, observed that compounds having the same number of atoms to the molecule are disposed to form the same angles of crystallization—a property which he called isomorphism.

Here, then, were two utterly novel and independent sets of empirical facts which harmonize strangely with the supposition that substances are composed of chemical atoms of a determinate weight. This surely could not be coincidence—it tells of law. And so as soon as the claims of Dulong and Petit and of Mitscherlich had been substantiated by other observers, the laws of the specific heat of atoms, and of isomorphism, took their place as new levers of chemical science. With the aid of these new tools an impregnable breastwork of facts was soon piled, about the atomic theory. And John Dalton, the author of that theory, plain provincial Quaker, working on to the end in semi retirement, because known to all the world and for all time as a master of masters.—Extract from "Harper's Magazine, October," 1897, *Western Dental Journal.*

ARTICLE V.

COCAINING PULPS FOR REMOVAL.

The removal of dental pulps, which is never an undreaded operation by the patient, and not always an easy one for the operator, can often be accomplished very satisfactorily to both. Dr. J. X. Crawford, of Nashville, says: "Of all the operations in minor surgery demanding local anesthesia, the removal of a live pulp most demands it. Having decided through diagnosis by exclusion that it is clearly a case of pulpitis and that the pulp must be removed, put on the rubber dam, dry the cavity, wipe it out with bichloride of mercury 1-3,000, dry again, and repeat several times. When satisfied that it is sterilized, peel away the dentine carefully until you get a tiny exposure; then take a little muriate of cocaine, 10 per cent. solution, on a tiny wad of cotton, and lay it over the point of exposure. With your fingers form of wax a lid for the cavity of the tooth, fit it over and convert the tooth into a force-pump, forcing in the cocaine. Then trim away more dentine, enlarge the exposure, and work your pump again, forcing in more cocaine; you will find that you can remove the pulp painlessly and pull it clear out of the lingual canal, which will offer no resistance. Now before going any further, cork up the canal to prevent any debris from entering. Now work in more cocaine, and with a broach remove the pulp from the next canal and fill that up. and so on. That tooth is worth all the pains you can take with it, and you want to keep the canals in an aseptic condition, preventing the entrance of any debris from the dentine you will remove in preparing the cavity for filling. That pumping process will enable you to anesthetize the pulp so that you can remove it without pain to the patient, and you will not want any more arsenic. In case of hemorrhage, the application of the bichloride of mercury solution will arrest it at once."—*American Dental Weekly.*

ARTICLE VI.

TRICHLORACETIC ACID AS A SOLVENT OF NECROSIS,

BY H. W. ALLWINE, D. D. S., OMAHA, NEB.

Last June Mrs. B. consulted a physician concerning a trouble apparently over, or at the symphysis of the inferior maxillary, and the case was placed in my hands by him. At that time the muscles about the chin were very tender and painful to the least motion, swollen, and of a dark blue color on the outside, as well as about the roots of the teeth. A fistula had formed over the root of the left lateral, from which pus exuded. This tooth was also quite sore to the tooth.

I believed the pulp of this tooth was dead, and proceeded to drill into the lingual surface of the tooth. Before proceeding far I discovered my error. I forced mild antiseptics into the fistula, applied a counter-irritant and dismissed the patient, that I might give the case careful study. In a few days the lady returned. It being a clear day, I noticed a very slight discoloration of the two centrals. These teeth were not in the least sore, and on drilling into them I found the pulps dead. The probe passed through the fistula indicating the unmistakable roughness of necrosis to the touch.

The quickest way out of the difficulty, I thought, was to make an incision and remove the cause. I also suggested to the patient the possibility of dissolving the dental structure with acid, though it might require a long time. She much preferred a fair trial of the latter method, so about once in two weeks I injected a 10 per cent. solution of trichloracetic acid. Twice a week a mild antiseptic was passed into the left central, through the fistula. The apex of the right central was opened nicely, but I could force nothing through the fistula from this tooth. At each visit I packed the canals with cotton saturated with mild antiseptics, and carefully sealed the cavities. I thus treated the case nearly three months. Indications being very favorable, I packed the canals, sealed the cavities, and told the patient to return in two weeks. At this time a very little healthy serum was found in the left central. I treated the case as before, and told the patient to return two weeks later. Then the conditions were such as I wished to have, and I proceeded to put in the fillings. This was done the latter part of September. December 11th I saw the case. The conditions was entirely satisfactory, and I believe a permanent cure was effected.—*Dental Register.*

ARTICLE VII.

CHILDREN'S TEETH AS INDICATORS OF DISTURBED NUTRITION.

BY S. HENRY DESSAU, M. D.

There are many forms of disturbed nutrition in young children where we find the teeth influenced the same as other parts of the body. Such, for example, are rickets, syphilis, diabetes, and the gouty diathesis, manifested in children as chronic intestinal indigestion. There is also a form of cretinism or idiocy, commonly called backward development, which is often of rachitic origin. Of all these mentioned, rickets may be taken as the most familiar illustration of disturbed nutrition affecting the teeth.

Rickets is commonly regarded as a diseased manifestation of faulty nutrition. By this much more is implied than a mere insufficiency of proper quality of food. Nutrition in its broader sense means food suitable to the physiological requirements of the age and condition of the individual. For example, Trousseau, the great French physician, claimed that he had produced rickets in young puppies and pigs by feeding them on raw beef, a food wholly unsuited to their age, though as we all know, dogs are carnivorous and hogs omnivorous animals. The mother's milk of a standard quality is the natural food of infants, but if they are fed on starchy food or a poor quality of milk, or given too much sugar or meat, they may easily become subjects of rickets. But nutrition has an equally important meaning in the proper assimilation of food. Fothergill said that above every nursery door should be written. "It is not what is swallowed, but is assimilated, that nourishes." By assimilation we mean the final and complete conversion of the food into its various elements by the animal organism, and the appropriation of these elements by the various tissue-cells to form new growth. The medium of its performance is through the blood, which receives in exchange those elements called waste matter that have already performed their part in the nourishment of the cell. It will at once be inferred that assimilation depends largely on something more than gastric and intestinal digestion.

Rickets in infants fed on artificial foods, containing chiefly starches, or milk with a small percentage of fat and a large percentage of casein. Such foods do in time undoubtedly derange infantile gastric digestion. But, on the other hand, we see cases of rickets in infants who are breast-fed, the mother's milk being of good average quality, with every reason to believe that it is well digested, so far as the stomach is concerned. Then again, there are rare cases of pre-natal rickets. Hence we infer that assimilation, for its perfect performance, involves complete oxidation in the tissues of the various elements of nutrition in the food, and this requires a free supply of oxygen to the blood in the form of pure air. It has been well said that rickets appears to be one of the penalties of civilization. It is certainly more commonly seen in large cities where breathing space is limited, and is rare or unknown among savage tribes, or those people who live an outdoor life. In this connection, it is interesting to note that rickets is extremely rare in the full-blooded African race as seen in this country, while in the mulatto or hybrid African it is quite common.

Besides proper food and its complete assimilation, nutrition requires as a factor the influence of sunlight, which in some unknown way, probably through furnishing heat, bestows vital energy to the tissues. The growing infant requires an amount of heat which it is unable to generate through its own muscular exercise, and therefore clothing properly adapted to the climate and season are necessary for its due maintenance. As will be shown later on, fats, which are known as respiratory or calorifacient food, aid in maintaining the body heat, and are highly beneficial in correcting the condition producing rickets.

Although rickets is called a disease of malnutrition, it does not necessarily cause wasting of the soft tisues of the body, though in fact these do become flabby, while at the same time the color of the skin becomes pale from a deficiency of the hemoglobin of the blood. This may possibly be explained by the gradual manner of development of the trouble, for in cases of acute malnutrition in infants, where the digestive functions are principally deranged, there is diarrhœa, followed by extreme wasting, commonly called marasmus, which condition does not present any of the phenomena of rickets. One other point in relation to the disturbance of nutrition as being the foundation of rickets is the effect of the mother's condition of health during pregnancy on the future child. The opinion has been advanced that a condition of anemia or poor quality of blood in the mother will so affect the developing embryo that after birth it will be readily disposed to manifest rickets from the slightest causes. In the light of such a theory, we must also admit heredity as a cause.

Having regarded rickets as a disease of faulty nutrition, it will now be interesting to consider its pathological features. The most noticeable lesions are observed in the bones and teeth, but the muscles, nerves, skin, and in fact all the tissues of the body, may become involved. The old idea which prevailed in medicine ascribed the deformity of the spinal column, which commonly occurs in an early stage of rickets, and is a prominent feature, to softening of the vertebral bones. Hence the origin of the name rachitis from rachis, the spine. We now know, however, that this deformity proceeds from muscular weakness only. Nevertheless, there does occur in the course of the disease softening of the bones, from which, as a result of pressure applied in various directions, arise deformities. This softening of the bones is due to a deficient deposit of lime-salts in the process of ossification, and not to any subsequent absorption of these salts. The present view in regard to the pathology of the disease, as stated by Dr. Barlow, of London, who is perhaps one of the highest authorities on the subject, is that there is an inordinate production of immature osteoblasts or bone cells at the seat of growth of the bones. These crowd upon one another in such a rapid manner that there is not only incomplete ossification taking place, but in some parts of the growth premature ossification as well. This pathological feature leads to the belief that the young bone cells are over-stimulated in growth by some element in the blood acting as an irritant to the nutrition of the bone cell. One theory attributes this irritant subject to lactic acid. Exactly what it is we do not as yet know. Recent advances made in the study of the blood may possibly tend to throw much light on this point, and it may be found that hemogenesis is an all important factor in the etiology of rickets.

The overgrowth of imperfect bone cells is most strikingly shown near the ends of the long bones at their point of growth known as the epiphyses, occurring as swellings, which may be easily recognized. In the bones of the skull the openings, as a rule, close late, but may also close too early, and there are sometimes found soft spots in the occipital region along the line of the sutures.

Next to the lesions of the osseous system, the teeth in their development and subsequent condition present the most noticeable feature of rickets. The temporary teeth are late in development, and the intervals between the appearance of the various groups are longer and more irregular than the normal average. So characteristic is this feature that I have come to be suspicious of the existence of rickets in any infant who has reached the first year of life without showing a tooth. I am fully aware that in holding this view I am at variance with other good and competent observers, but so far as my memory serves me, a close investigation has always confirmed my suspicions. It may be interesting at this point to call attention to the observations made by Dr. A. Brothers of this city, in an analysis of over 500 cases in infants where the various stages of dentition were recorded, that in those infants affected with marasmus or acute malnutrition from digestive causes only, out of eight observed the first tooth appeared at an average of five months, the further progress of eruption, however, being somewhat delayed. I mention this as showing a further contrast of marasmus with rickets, even upon the development of the teeth. (The cross growth of teeth, or their irregular position in the alveolar cavity, has likewise been attributed to rickets.)

The most interesting feature, however, regarding the teeth in rickets is one that concerns the dentist more than the general practitioner of medicine. I refer to the tendency to early decay of the temporary teeth, and less frequently the permanent teeth. This decay I have often observed occurring in the central incisors even before the eruption of later groups. It was in several instances manifested as a distinct notch in the crown of one or both upper central incisors. In older children many teeth may be frequently found decaying rapidly at one time, as if they had crumbled away. The notched appearance of the upper central incisors occurring in the temporary teeth should not be confused with the same condition occurring in the permanent teeth. It is the latter that is known as the Hutchinson tooth, and is a stigma of inherited syphilis.—*Dental Cosmos.*

ARTICLE VIII.

THE DENTIST.

BY DR. B. F. SHEPPARD.

The dentist should be a man of decision and self-reliance. He should feel that he knows, and is able to do, so that his very attitude will forbid the suggestions of those who will have everything their own way, and still hold him responsible for the success of the operation. Many a man who really knows fails because of a lack of self reliance, thoroughness and stamina equal to his knowledge. He should cultivate that spirit of fortitude which will enable him to grapple with all difficulties bravely, decisively, marking the hand of a master in all his work.

The dentist should have combativeness and destructiveness sufficient to give efficiency, enabling him to witness pain and suffering and to employ the means necessary to relieve without trembling or hesistancy. It has been said that the physician needs the lion's heart and the woman's hand. It is equally true of the dentist. He should have combativeness and destructiveness, firmness and self-esteem, to give the lion-like power, ideality, constructiveness and gentleness, which come from refinement of temperament, to give the woman's hand. We have seen men who had power, self reliance and persistency, who carried these forces with admirable gentleness, and self-control.

He should have prudence, caution, secretiveness and good common sense, and the more common sense the better. Cautiousness will make him desire to do the right thing at the right time and place. Secretiveness will enable him to keep his mouth shut at the proper time, and control his countenance as well as his expressions, and be always master of the situation, when too open an expression would have been disastrous.

He should have large hope and mirthfulness, and aa excellent talking talent, so that he may put an atmosphere of mirthfulness and good feeling around im at all times.

Large constructiveness is necessary to the dentist, in fact his profession has been considered by some as only a mechanical trade. While this is not true, yet his ability to put together, his judgment or knowleage of the right condition in constructions, will mark his success in prosthetic and operative dentistry, as well as all operations in oral surgery. It will enable him to meet the requirements of anæsthetics in dentistry, elaborating and bringing together the many parts into one harmonious whole.

He should have strong social feeling, so that all the relations of social life may be appreciated by him; so that his patients will become friends, and feel a lively interest in his success.

He should have continuity of purpose. All the great minds of the world have been marked by a spirit of continuance, a pushing ahead, and an unflagging zeal which could brook nothing less than ultimate success.—*Ohio Journal.*

ARTICLE IX.

PRACTICAL THINGS IN DENTAL PRACTICE.

BY J. G. TEMPLETON, A. M., D. D. S., PITTSBURG, PA.

To protect the pulp from thermal changes, thoroughly dry the cavity with absolute alcohol, next coat the cavity with varnish made by dissolving common resin in chloroform, then cut from a thin piece of asbestos felt a piece just large enough to cover the bottom of the cavity, and moisten with wood-creosote or campho-phenique, and cover one side with a mixture of oxid of zinc, iodol, and vaseline or aboline, and place it over the bottom of the cavity, and a filling can be inserted that will not convey heat or cold to the pulp.

The old-fashioned bur drill and excavator should be used more than they are in the preparation of cavities instead of relying entirely on the burring engine.

The engine and the sharp bur may be satisfactory to the operator, but very much less so to the patient.

To make moisture tight gutta-percha fillings: Dry the cavity well, place in it a pellet of cotton saturated with absolute alcohol, remove the cotton and with a warm air syringe evaporate the alcohol, varnish the cavity with a solution of common resin in chloroform, warm the gutta-percha and pack with a cold instrument; heat a thin-bladed instrument and pare off the surplus gutta percha; any further trimming or polishing required may be done with oil of cajeput.

To protect from thermal changes, particularly in deep cavities where the pulp is not quite exposed, first dry with bibulous paper, then apply on a small pellet of cotton absolute alcohol, which has a strong affinity for any moisture that may be left in the cavity or open ends of the tubuli. When the cotton is removed evaporation takes place rapidly, leaving the cavity dry. Now varnish inside of cavity to near the margin with a solution of common resin, in chloroform, or of gum sandarac dissolved in sulfuric ether; then take a small piece of asbestos felt, moisten with pure wood creosote, campho-phenique, or oil of eucalyptus; cover the side to go next to the pulp with a mixture of iodol, oxid of zinc and vaseline. Now place over the bottom or that portion of the cavity nearest the pulp; now over this place a thin piece of lead or a thin piece of aluminum plate, which will prevent pressure against the bottom of the cavity while inserting either a gold or other metallic filling.

For pyorrhea remove all deposits, and then apply finely pulverized sulfate of copper, which is caustic, astringent and stimulating. It has been my observation for many years that the most aggravated cases of this disease are found in the mouths of those who never eat pickles or anything sour, hence we are in the habit of recommending their use at meals, and also the free use of lemons and oranges. Such patients should be impressed with the importance of adopting an anti-scorbutic diet.

A slip-noose can be put on the lower front teeth with one band, while the rubber-dam is held down with the other; get the slip knots ready first, draw them tight, and they will hold as long as wanted.

In finishing plates always trim the rim low over the bicuspids, leaving it high as can be worn over the cuspids, and the same over and back of the second molars; do not file rim to a knife-like edge, slightly bevel inside of rim at the top, extending down about three-sixteenths of an inch.

To make platinum gold plate, melt with blowpipe pure gold on a piece of platinum, and roll to the desired thickness; the result will be as good as any you can buy.

Gold Solders.—Take a United States $5.00 gold piece, 20 grains coin silver, 10 grains pure copper, 6 grains English toilet pins, melt the silver and copper together first; after melting this and the gold together, add the pins, flow into an ingot and roll, cut it into small pieces and melt again if it should not roll well first time; this will give a solder a little more than nineteen carats fine, and flows nicely on coin gold being the same color.

To solder a cap on a gold tube intended for an artificial crown lay the cap on about a tablespoonful of finely cut asbestos, put the tube in place on the cap, drop in the solder and a little powdered borax, then blow a yellow flame all around the tube till the solder flows, and there will be no danger of melting the plate,

To keep instruments polished, use a material sold in wholesale jewelry houses under the name of diamantine; the method of using is to place a small quantity of the powder on a piece of thick spongy sole leather, and rub the instrument on it, when it will soon take on a fine polish. This diamantine is oxid of zinc, and can be bought in a wholesale drug house much cheaper.

To keep the rubber-dam from jumping off a lower molar tooth, tie a small bead in the thread to be used as a ligature and apply around the tooth so that the bead will come on the lingual side of the tooth, and thus frequently avoid the use of a clamp, which is not admired by many patients.

To take an accurate impression of the mouth for a partial upper set of teeth, smear plaster over the roof of the mouth with the finger, take a string about one foot in length, tie the ends together, put the tied end of the loop into the plaster on the roof of the mouth, and add more plaster to thoroughly imbed the knot, leaving the loop of the string hanging down. In placing the plaster in the mouth care should be taken to have it come full half way over the grinding surfaces of molars and bicuspids, and cutting edges of the front teeth; then trim the plaster and varnish the trimmed surfaces. The plaster should be so trimmed that it will fill up fully one-half of all spaces between the teeth; then cover all the remaining surface of the mouth and teeth with plaster, being very careful to have the teeth well covered and spaces filled in, putting on plaster for the buccal and labial surfaces. When set, the plaster impression readily parts where it has been varnished, the palatal portion is dislodged with the help of the string used, and the pieces are then placed together and the model made. If a tooth is irregular use modeling compound about it and trim suitably; then apply the plaster. When removing it breaks where joined; then remove compound, place in position in the impression and pour the model.

In vulcanite work the best results may be obtained by making models one-fourth marble dust, and three-fourths plaster; also same in flasking the case. The best plaster that I have ever used is that made by Mr. Higginson, at Newburg, N. Y. The best and sharpest models are made without using varnish of any kind on the plaster impression; instead, lather the impression with soap, which is readily done by wetting a camel's-hair pencil and rubbing on a cake of soap and applying to the impression till it is covered, and then set it in a basin of water for a few minutes till the plaster has absorbed all the water it will take, when it should be held under the hydrant for about a minute to wash off the excess of soap; it is now ready for pouring or filling with plaster and marble dust to make the model, which, when it has set sufficiently, can with the exercise of a little care be separated as nicely as if a thick coating of varnish had been used. In this way a sharp model can be made without obliterating any of the fine lines of the impression, which is one of the little things that should always be attended to at the proper time.

In all operations in dentistry it always pays well to attend to the little things at the proper time.—*Review.*

Obituary.

DR. DE WILTON SNOWDEN DEAD.

He Passes Away at Laurel at the Age of Eighty Years. A Well-Known Physician. Among the First Marylanders to Espouse the Cause of the South. Connected with Some af the Old Families of the State and Brother of the Late Henry Snowden. A Member of the House of Delegates in 1880. Sketch of His Interesting Career.

Dr. De Wilton Snowden, one of the oldest citizens of Laurel, died at midnight Wednesday, November 25th, at the home of his son-in-law, Dr. Emory G. Valk, on Washington avenue, Laurel, Md. He had been in feeble health for a year, suffering from a disease of the heart. Last winter he was dangerously ill for a long time, but during the summer he was able to walk about town and attend to his business affairs as usual. He was out of doors for the last time on Tuesday. On the same day he was again taken ill, and Dr. John D. Cronmiller, his attending physician, was summoned. He exerted his skill to revive the flagging energies of his patient, but Dr. Snowden was beyond the aid of science. He grew weaker, although retaining consciousness most of the time, until the end came, peacefully, in the presence of several members of his family.

Dr. Snowden was eighty years of age. He was born at "Montpelier," three miles from Laurel, the homestead of his branch of the Snowden family. He was the third son of Nicholas Snowden, and his wife, whose maiden name was Warfield. Nicholas Snowden died about 1840. He had six sons, Thomas, Edward, De Wilton, Henry, Arthur and Nicholas. Of the five daughters, only one survives—Miss Eliza Snowden—who is now a nun in a convent at Georgetown, D. C. The eldest daughter married Mr. Frank Hall, and afterwards, Mr. Charles Hill; another became the wife of Mr.

Charles C. Hill, and the mother of Mr. F. Snowden Hill, ex-collector of internal revenue for the Maryland district. The others were Mrs. Capron, wife of Colonel Horace Capron, and who was influential in the establishment of St. Philip's Church; Mrs. Jenkins, wife of Dr. Theodore Jenkins; Mrs. Bowie, wife of Colonel Walter W. W. Bowie.

Dr. Snowden was a great-great-grand son of Richard Snowden, who came to Maryland from Birmingham, England, in the seventeenth century, and secured a patent from the Crown for "Birmingham Manor," and other large tracts of land in this country. By his marriage with Miss Rutland, Richard Snowden became possessed of all the land within a radius of ten miles of Laurel. He started the first iron works in this region at Elk Ridge and later established those at Patuxent and Muirkirk. The Snowden family, for a long stretch of years, was among the largest landholders in Maryland, and has had, from colonial days a very numerous connection, through marriage, with the prominent families of the state.

Dr. Snowden secured a liberal education, and half a century ago was graduated in medicine from the University of Maryland. He practiced successfully until the outbreak of the war. He was among the first Marylanders to espouse the cause of the South, and became an orderly sergeant in the famous Dement Battery. Later, he was commissioned surgeon in the Second Maryland Infantry, commanded by Colonel James R. Herbert, who was a cousin of Dr. Snowden His brother, Nicholas Snowden, of the same regiment, was killed in one of the battles of Jackson's Valley campaign, in which the regiment distinguished itself. Dr. Snowden was at Gettysburg, when the regiment was annihilated and most of its field officers killed or wounded. Colonel Herbert was among the wounded. Dr. Snowden's valor and skill were often conspicuous in battle and in field hospital.

Returning to Laurel at the end of the war, impoverished but undaunted, and following Lee's advice at Appomattox, Dr. Snowden resumed the practice of his profession. He speedily built up a large and lucrative practice, and for many years was also engaged in the drug business. He amassed a competence before the weight of age led him, about four years ago, to retire. Dr. Snowden had been identified with every movement for the advancement of Laurel. He was a member of the House of Delegates from this county at the sessions of 1876 and 1880. In 1895 he was elected president of the Laurel Electric Company. He was a member of Laurel Wreath Lodge of Masons.

Dr. Snowden married Miss Emma Capron, niece of Colonel Horace Capron, the founder of Laurel. She died about twenty years ago. Dr. Snowden's immediate family consists of two sons. Messrs. John C. Snowden and De Wilton Snowden, of Laurel; and two daughters, Mrs. Emory G. Valk, of Laurel, and Mrs. Laurence Reese, of Baltimore city. Colonel R. Snowden Andrews is one of the many well-known Baltimoreans connected with Dr. Snowden's family.

DR. EVANS.

Dr. Thomas W. Evans died suddenly of angina pectoris, in Paris, France, November 14th, 1897, having never recovered from the shock of his wife's death.

Dr. Evans was born in the city of Philadelphia, December 23, 1823, and went to Paris in 1846, where he won a great reputation. Since his advent in the French capital Dr Evans has attended to the teeth of most of the crowned heads of Europe, to say nothing of almost innumerable members of the royal families, excepting Queen Victoria and the Sultan of Turkey. He attended Napoleon and the Empress Eugenie and assisted the latter to escape from Paris in his carriage after the battle of Sedan.

The French Emperor, Napoleon III, was one of Dr. Evans' best friends as well as best patients, and the American dentist, in consequence, was in favor at court. Many of the improvements undertaken by Baron Haussmann, which made Paris the pleasure capital of the world, are said to have been undertaken on the advice of Dr. Evans.

Dr. Evans had confidence in the splendid future of Paris and bought largely of real estate in the direction of the improvements. It was he who helped the Emperor design and carry out the vast improvements around the park of the Bois de Boulogne. The Doctor's investments in the neighborhood of this new fashionable park made him a many-times millionaire. Land bought by him in the early days of the imperial regime for 30 francs the square metre cannot now be obtained for less than 1,000 francs.

Early in the morning of September 4, 1870, the news of the surrender of Marshal McMahon's army, coupled with the abdication and capture of Napoleon III, reached Paris. Mobs began moving on the Tuileries and there was nothing left for the Empress but to escape as quickly as possible from the palace.

The Empress and Mme. Le Breton were thrust by their companions into a cab, but they soon discovered that they only had 3 francs between them, probably not enough to pay the driver, and so they alighted and walked on. Suddenly the Empress realized that they were near the house of Dr Evans and they hurried to him for assistance. Mrs. Evans was out of the city, and so the Empress was given her room and clothing was selected as a disguise. First the doctor tried to get a pass to leave Paris, but failed. He found, however, that one of his friends was in command of the troops at the Bridge of Neuilly, and he succeeded in informing the latter that he would like to pass over the bridge that night with two of his lady patients. The Empress was to play the part of a feeble woman, who was being taken away to a sanatorium. The plan succeeded.

It was Dr. Evans who introduced the Empress to Napoleon. The mother of the Countess of Montijo was first a client and then a friend of Dr. Evans. The mother sent her daughter to Paris as a school girl. The young Spanish beauty as a school girl spent all of her fete days at the house of Dr Evans It was Dr. Evans himself who took her to a ball given by Napoleon when President. The young lady had heard of the ball and was anxious to go. Her mother had no invitation. as she was in moderate circumstances and was unknown in the Paris world of fashion Dr. Evans went to the President himself and asked for an invitation for his fair protege. It was at this ball that she was formally presented to Napoleon by Dr. Evans.

Dr. Evans was a very wealthy man. his fortune being estimated at from $25,000,000 to $35,000,000. He visited the United States in August last, bringing with him for interment at Philadelphia the body of his wife. They had no children. While here Dr. Evans is said to have made arrangements to endow schools of dentistry in several of the American universities. The doctor is said to have left large sums of money to charity, and during the course of his life he received innumerable orders and other decorations from foreign potentates.

Among his nephews are Dr. John D'Oyley Evans, of Paris, France, and Dr. W. W. Evans, of Washington City.

Dr. Evans said to an interviewer recently :

"The greatest sorrow I have known was to find my chosen profession deep in the mire. The greatest joy of my life, my proudest achievement and most satisfied thought, is that I have lifted it up from the mud and placed it on the pedestal where it belongs. Year after year I worked, and my best reward is to know that dentistry is now recognized and honored as a profession."

The secret of the success of Dr. Evans as a dentist may be said to be in the fact that he was among the first American dentists to locate in Paris, and also among the first to introduce gold filling for teeth into Europe.

Dr. Evans remained the friend of the United States during the civil war, buying American securities when they dropped to very low points, thus backing up his statements that the Confederacy could not win. The doctor's patriotism had its reward, for the securities eventually built up a large part of his fortune.

Dr. Evans practiced dentistry for a while in Maryland and in Lancaster, Pa., before going to Paris.

Monthly Summary.

FAULTY NUTRITION —By S. Henry Dessau, M. D.—We may rightly regard the condition of early decay of the teeth, either temporary or permanent, as one of faulty nutrition, and this should receive the attention of the specialist as well as the general practitioner. To be well informed on this point is to have at hand a remedy, for fortunately the condition of rickets and allied complaints is amenable to correction and cure. The health of the pregnant mother should be kept at the highest point by careful regard and attention to outdoor exercise, and the maintenance of all the physiological functions. Added to this, her diet should be of that combination to secure a maximum quality of nutrition. The infant requires fresh, pure air, and plenty of it. No sleeping in closed rooms full of stale, overheated and over-scented air. It should be well protected by proper and sensible dress from cold and dampness. Above all, its food should be what nature has provided for it, with due regard to the mother's condition. In the unfortunate absence of mother's milk it should have the best substitute, which is by all odds good cow's milk, properly modified by modern methods to suit its digestion. All patent foods, each advertised as the best, should be severely rejected. They are without doubt a most prolific factor in the causation of rickets and allied complaints. Milk should be the sole article of food until the eruption of the first full group of teeth, whether mother's milk or cow's milk be used and that exclusively. Unless proper judgment is shown as to the quantity given and time allowed for the stomach to become emptied before given again, trouble in the form of digestive disturbances is sure to follow. It is, in my opinion, of the highest importance that the infant should not be overfed. This, in my experience, is a pernicious practice, and the one most difficult to combat in the nursery. If we could only live on half what we do humanity, from the cradle to the grave, would be the better, brighter and broader for the doing of it. —*Cosmos.*

A COLORED LADY DOCTOR.—The Louisiana State Board of Medical Examiners has granted a diploma to practice medicine to Mrs. Emma Wakefield, a lady of color. She is said to be the first woman of her race in the South, or indeed in the Union, to receive this privilege. Mrs. Wakefield is the daughter of Ex Senator Wakefield, and a graduate of the medical department of the New Orleans Colored University. We presume that this lady doctor will practice exclusively among those of her own race, as the objection among the white folk in the United States to being brought in close contact with their colored fellow citizens is very great. —*Dental Brief.*

FOR INFLAMED EYES.—Break in small pieces and put into a bowl four poppy heads. Pour boiling water over them and allow it to draw for ten minutes, then strain. Saturate soft linen and bathe the eyes several times a day.

A GOOD CEMENT.—An excellent cement for mending almost anything may be made by mixing together litharge and glycerine to the consistency of thick cream or fresh putty. The cement is useful in mending stone jars or any coarse earthenware, stopping leaks in seams of tin pans or wash-boilers, cracks and holes in iron kettles, etc. It may also be used to fasten on lamp tops, or tighten loose nuts, to secure loose bolts whose nuts are lost, to tighten loose joints of wood or iron, or in many other ways about the various kitchen utensils, the range, sink, and in the pantry fittings. In all cases the article mended should not be used till the cement has hardened, which will require from one day to a week, according to the quantity of cement used. This cement will resist the action of water, hot or cold, acids, and almost any degree of heat.—*Bottler's Gazette.*

A LAKE OF PETROLEUM.—While the whole world is excited over the gold discoveries in the North, sight has been lost of another discovery that promises to be of great value in the development of that section. Some months ago a lake of almost pure petroleum was discovered, and samples were sent to Seattle for analysis.

The find is reported to be of great richness. A company has been formed in Seattle to handle the product, and travelers from there say that the company intends to put in on the Alaskan market at once. The lake is of unknown depth, several miles wide and five to six miles in length, and the quality of the petroleum is said to be of the finest. The lake is only two miles from the ocean. The hills surrounding it are said to be rich in coal and asphalt. It is the expectation of the owners of the lake to take its products into the mining camps of Northern Alaska whenever the waterways will permit.—*Tribune.*

PREVENTION OF TARTAR.—Rinse the mouth freely once a day with water in which a pinch of alum has been dissolved. It is harmless to the teeth and keeps the gums in good condition, preventing the accumulation of tartar.—C. N. Peirce, in *International Dental Journal.*

WHAT TO TRY.—

Try cranberries for malaria.

Try a sun bath for rheumatism.

Try clam broth for a weak stomach.

Try cranberry poultice for erysipelas.

Try a wet towel to the back of the neck when sleepless.

Try swallowing saliva when troubled with sour stomach.

Try buttermilk for removal of freckles, tan and butternut stains.

Try breathing the fumes of turpentine to relieve the whooping cough.

Try taking your cod liver oil in tomato sauce if you want to make it palatable.

Try a hot, dry flannel over the seat of neuralgic pain, and renew it frequently.

Try a cloth wrung out from cold water, put about the neck at night, for sore throat.

Try walking with your hands behind you if you find yourself becoming bent forward.

Try planting sunflowers in your garden if compelled to live in a malarial neighborhood.—*Health Monthly.*

ENGLISH PEOPLE'S TEETH.—Education is playing sad havoc with the teeth of modern generations. So an experienced dentist in the West End says, and he ought to know. Formerly decayed teeth were generally attributed to a secret fondness for bon-bons, but the idea is, it appears, quite a mistake. In fact, sugar is rather nourishing than otherwise. The truth is that the ancient sturdy, square jaw of the English race is changing, through lessons and book learning, to an angular or V-shape, which presses the molars one upon the other, does not give them room to grow, and will in time prevent some of them cutting at all. Indeed, this catastrophe is not infrequent already. In many the original teeth are becoming less in number than they ought to be, and often the "wisdomers" fail to appear. This is an "educated jaw" is lamentable. The new facial form is, according to the dentist, much cultivated by ladies, who find that it is popular among gentlemen. The latter like women with the "educated" angle of chin, which generally carries with it pearly, but very frail teeth. If the specialist be right, this process of selection, aided by further lessons and more study, will, in the course of time, produce a race without any teeth at all. Then will the dentist make fortunes—for people will require complete artificial sets from babyhood onward.—*Telegraph.*

THE MICROMOTOSCOPE.—A micromotoscope has been invented, which is a kinetoscope for photographing small life in motion as seen in the microscopic field. The pictures are taken by the gelatin film at from 5,000 to 15,000 magnifications and at a rate of 16 to 2,560 per minute.

The inmates being magnified thousands of times when projected on a screen, the views of some of the families of microbes are very realistic. It has been learned that some of them possess great intelligence.

The photographs of blood in circulation in the thinnest part of the ears and of the fingers, showing its capillary and arterial motion, and the changes going on in the white cells, are of great interest. They indicate something of the nature of life and disease. The stream of circulating human blood is so swift that the eye cannot keep pace with it, and the changes in the white blood cells are correspondingly rapid. Some of the pictures show a white cell on the fast moving stream, like a white cap on the sea, constantly changing its shape. It throws out or takes in its arm like an octopus, seizing the microbes in its path. In disease this movement of its arms takes place with much less energy than in health.

These pictures cannot fail to be of great value in the study of diseases. The micromotoscope will greatly aid in the investigation of phenomena of action of ameboid life in water.—*Boston Transcript.*

POPULAR ERRORS CONCERNING SNAKES.—From time immemorial, snakes have been regarded as creations of nature fit only to be despised and trampled under foot; and the people of to-day fulfill the scriptural prophecy which says "thou art cursed above every beast of the field." Such a universal feeling of dread and distrust of snakes exists, that, as a consequence very little is known concerning them.

A popular error is that snakes can sting a person, with whom they come in contact, It is an absurd impossibility, for the tongue of a snake is a very delicate organ, used chiefly for feeling and tasting. A snake, crawling over the ground, will at intervals put out its tongue to feel or perhaps taste of the objects it is passing. Frequently have I seen the garter-snake, crawl up to a frog that had been motionless for some time, feel of it with its tongue, and then, as if it tasted good, would proceed to swallow it. It evidently tastes water or milk before drinking, for it feels or tastes either liquid, and, finding it good, begins to drink. Very often when seemingly attracted by music from a flute, the same species would raise a third of its length off the ground, gently swaying its body, and slowly wave its tongue up and down as though it were hearing with that organ.

Many persons firmly believe that snakes charm their prey. Many affirm, others deny, that the statements made are correct, and the popular press of the day, eager to please its patrons, will now and then serve up interesting accounts of serpent fascination. Thus it is that the public, constantly hearing some exaggerated snake story, will look more and more askant at snakes, killing them whenever found, and thus destroying the many non-venomous of our clime, which have been proved to be useful friends of the farmer in reducing the number of injurious insects.—Armitage Green, in *Pop. Science.*

REMOVAL OF BLOOD STAINS.—Rinse hands, napkins, instruments, etc., in warm water, to which a teaspoonful of tartaric acid has been added. Rinse afterwards in plain water.—*Record.*

PRESERVING GUTTA-PERCHA.—Gutta-percha for filling purposes may be preserved in good condition for years keeping it in a solution of table salt.—*Dominion Journal.*

MASSAGE OF THE GUMS.—In inflammation of the gums, and other disturbed circulation about the gingivæ, massage with the ball of the finger will be found very useful. It presses the blood out of the distended capillaries, hurries the circulation in the sluggish blood-vessels, giving tone to the whole local territory, re-establishing the nutrient currents and promoting resolution in inflammation.—W. E. Barret, in *Dental Weekly.*

TO CEMENT METAL TO GLASS :—

Rosin, - - -	3 parts.
Soda, - - - -	1 part.
Water, - - -	5 parts.

Boil until a soap is formed.

To fifty parts of this soap add slowly, and with constant stirring, one hundred parts plaster of Paris.—*American Druggist.*

IT is poor economy to use old or poor burs. We know an excellent operator who lost much of his practice in this way. Both he and his patients suffered for it. One of the wisest investments in the operating-room is a good dental engine run by a motor, and a full equipment for the front and back action.—*Dominion Dental Journal.*

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ARTICLE I.

HOW TO ESTABLISH A DENTAL PRACTICE.

BY N. S. HOFF, D. D. S.

There must be a personality. I am aware of the fact that many practices are established that are in certain directions and in some measures successful, and which seem to be entirely impersonal. Patients visit the New York, or Boston, or Battle Creek dental parlors and put themselves under the care of no one in particular, but like chickens hatched in incubators, reared by a wooden box with cloth skirts and marmed by an oil lamp—a poor substitute for a vigilant, fat and well-fed mother hen. But I do not claim to know anything about hatching out dental practices on the incubator plan. I wasn't brought up that way, and of course I have little sympathy with this kind of practice building. In the kind of practice that I think we all crave, the personality, while not everything, is so important that I give it the first place.

We cannot regenerate men physically as we can morally. But I believe where incurable physical deformities exist much can be done, with a proper appreciation of the requirements necessary for the adoption of one to his environment. A man that is physically ill-formed may not be able to modify his conditions to make himself acceptable to everybody, and yet many an ill-natured person by persistent effort, thought and care taking has been able to so modify his unattractiveness as to make himself entirely tolerable. I believe that all persons having such disabilities should be advised of their disadvantages before entering the profession. But when one is qualified and prepared for practice these natural disabilities should not deter him from making a heroic effort to so conceal them with other attractive qualities as to have himself recognized in spite of his misfortune. Neither a blind man nor an armless man could practice dentistry successfully. There are many persons, however, trying to practice dentistry with defective eyes, and, unconsciously perhaps, are not availing themselves of the aids a good oculist could give them. There are many persons with crippled fingers, stiff joints and lack of acute tactile sense of the fingers, all of which stand in the way of successful practice. The skilful surgeon, a course of massage, or persistent attention to the care of the skin by systemic and local treatment would soon enable a bungling operator to appreciate the difference in the size of a lead pencil and nerve broach.

It is important to take into account temporary disqualifications, conditions of neglect in clothing, toilet, or the presence of disease or its results. These may be and usually are offensive, and will keep patient and dentist out of harmony with each other. No delicate and refined lady wants to have for her dentist a man who smokes, neither will such a one long tolerate a person whose breath suggests the garbage pail from his indulgence in malt liquors, fragant cheese and odoriferous relishes. Catarrhal trouble without proper care is bound to be offensive. If ther is indigestion the conditions certainly demand peremptory correction. Eruptions in exposed parts of the body and other offensive conditions are to be scrupulously avoided. Strict attention to personal habits of cleanliness, combined with clean and well selected clothing and ornaments, are of the greatest moment, and scrupulous cleanliness, both internally and externally, are necessary and to be constantly striven for and kept in mind. It is above all necessary that the dentist should be above reproach or suspicion morally. It is not for me to formulate or quote a moral code for any one. The dentist should be an honorable gentleman, and it will not be any drawback to be known and recognized as an active and energetic member in good standing of some religious organization. Of course I would not have any one infer that a church membership is to be valued as a business aid only. A person who would make use of any sacred organization for his own selfish purposes deserves the severest contempt of every right-minded person. But it is legitimate for a person to make use of the church, and any or all other organizations which he can command, to exalt and ennoble his own character. And no personality which is not in some way influenced by Christian religion or morals is fully equipped to make the most out of his opportunity to serve a large and appreciative support.

Again, an educated person will have decided advantage over one whose entire store of knowledge is confined to his profession, or is limited and characterless. Patients respect culture in their dentist as in their preacher, doctor or lawyer. The broader a man's knowledge the wider will be his influence professionally. What are the essentials ? Every dentist who hopes to get and retain the confidence and support of his patients must be well qualified to perform all ordinary service in a good and substantial manner. This implies a thorough course of training in all the technical functions of dentistry, as well as such theoretical study as shall be necessary to qualify him to correctly diagnose diseased conditions, and to apply proper and adequate remedies for relief. To obtain this degree of proficiency he must set a high mark for attainment; one that cannot be reached by a three years' or five years' course of study in any dental educational institution, but which shall only be reached after years of careful and painstaking effort to do the best possible for every case undertaken. Simple as well as difficult cases should be subjected to the closest scrutiny, that nothing of value or interest in any case may be overlooked. The early establishment of a systematic method in making diagnoses, and the treatment of every case by principles rather than without interest or mechanically, is of the utmost importance. No dentist who performs his work in a perfunctory manner will respect or love his work, and his patients will know of it before he fully appreciates it himself. The man who cobbles a shoe takes pride in his work in proportion to the skill and thought he puts into it. The scientist, diplomat or statesman takes pride in his work only so far as he has put his best into it, and the dentist who will put all the brains he can into his work will soon find his heart enlisted, and it will be marvelous indeed to have such a combination defeated. We always find that the man who gets thus interested in his own work and becomes attached to his calling, and finds himself appreciated by the community in which he lives, begins to think of his professional brethren, and he wants to know what they are thinking and how they get along with their work, and he subscribes for the dental magazines and begins to read, and then he wants to see these men who write and talk in society meetings. He wants to ask them some questions that he finds difficult to adjust, and so he joins his local, state or national dental society, and he attends the meetings as religiously as he does his church prayer-meeting, and he feels in duty bound to take his part in the dental meeting just as much as in his church society, and thus he gets interested in his profession and his patients know it without any announcement on his part through the press, and are glad of it and proud of their dentist, not because he announces in all the local papers that he is such a big man away from home, that he has been announced by the dentists in national assemblage to tell them how he does it, but because they are glad that he is broad and liberal enough to take an interest in his calling, and is willing to sacrifice his time and money to get on in the calling to which he is devoting his life.

A very wealthy and intelligent man, a warm, personal friend of mine, said to me, when I was a young professional man, that he would like to come to me professionally, and send his family to me, but he said he had always gone to another dentist, and had paid him large fees willingly, because he knew that he gave him his best services, and further that he believed that he was a thoroughly professional man, and would use whatever money he paid him for the advancement of his profession. To me this statement was an eye-opener, and I have many times wondered why all people did not hold the same view. I really believe more of our patients have something of this idea than we think, though they may not be conscious of it or be able to formulate it into any well defined theory for action.

If we expect to attract intelligent and discriminating people professionally we must be the embodiment of the highest ideas of the professional. We must actually live the life, not theoretically nor ostentatiously, but honestly and conscientiously.

There must also be the faculty or ability to conduct professional business on legitimate and conscientious business principles. The comment is frequently made that professional people are notably deficient in business methods or habits. Few professional men accumulate large properties, although they may do considerable business and at good profit. Professional men ought to lay by a portion of their earnings, and begin early to do so, and keep everlastingly at it, and employ the safest means available for caring for these accumulations until such time as they are of sufficient amount to purchase productive real estate or safe mortgages.

But there is another way in which dentists, doctors and lawyers are frequently accused of being bad business men. This is in not meeting their obligations promptly. There are of course rascals in the dental as well as in other callings, but all dentists who do not pay their debts promptly are not rascals, at least not intentionally. Many professional men are tempted or educated into this lax habit of not paying bills promptly by their patients. Doctors are probably the worst paid of all professional men, perhaps lawyers next, and, owing to their close relationship, dentists' bills are put off until the landlord, the grocer and baker are all paid, and if anything is left the dentist gets it, and after he is paid the doctor may get a portion. A dentist in full practice realizes that he is making a profit, and naturally thinks he has the right to use it for such necessities and luxuries as he may desire, and consequently spends or contracts to spend much of his money before it is collected. Or if he is not so reckless, he reasons that when others owe him he has a right to hold off payment of his debts until some convenient time. This is a kind of logical justice that has no support in the moral code. Nevertheless, it operates largely, and with men who would not like to be called selfish or dishonorable. The moral is that to have the confidence of the business community a dentist should pay his debts as promptly as it is possible, and never to spend his earnings until in hand. To do this he will need to give some thought to the manner of making his collections regularly and systematically, and without offense to his patrons. This brings up the whole subject of keeping accounts and records, and the best methods for regulating fees and of making collections which I have no time to discuss here; but I do want to say that the business part of conducting a dental practice is exceedingly important, and should not be carelessly nor thoughtlessly managed. I have heard it said of dentists that their fees are often based not on the character and amount of the service rendered so much as on the ability of the patient to pay or the pressing needs of the dentist. I once had a dentist relate to me how he worked the fee he first planned to charge to more than double, simply because he had a willing patron and his wife insisted on his buying a handsome velvet cloak for their daughter. Such business ideas are not only selfish, but contemptible and dishonorable, and no man who practices them will permanently succeed, nor should he. Such habits will unquestionably demoralize business capacities and wreck professional life, because the aim will eventually be not how well can the work be done, but how quickly and at the least possible outlay of effort, mental and physical. Its result is to be found in the miserable attempts we see all around us, to get the attention of the unwary by resorting to all sorts of schemes to get the public to take notice of the great and only Dr. Quack, who extracts teeth free, without pain, from 9 to 12 o'clock on Saturdays, etc. Does any intelligent, honest or well-bred and self-respecting man want to have such a name or notoriety? So any one seeking such notoriety a more commendable method, and one not likely to injure innocent and unsuspecting persons, is to get together a menagerie of albino children, bearded women, double-headed calves, big snakes, etc., and erect a tent on some vacant lot, and with a hand organ to attract the crowd he can gratify his ambition of being seen and heard.

The vulgar display of our profession is not to be commended. It is not a good business idea for a young man, when he decides on a location, to embarrass his future business success with an extravagant outlay for furniture, equipment or excessive office rent, which he has no immediate nor remote probability of being able to pay. I would not, on the other hand, advise a man to outfit so meanly that refined persons would hesitate to approach his premises, or that he would be handicapped in his work by inferior or inadequate accessories. But no man is justified in making what exceeds the bounds of good judgment in assuming financial obligations which may cause him to lose his professional and business integrity. The chances of recovering ground once lost in this way are few, and it is better far that time should be sacrificed than honor or professional standing in the community and among the professional brethren.—*Dental Register*.

ARTICLE II.

USE YOUR JUDGMENT.

BY DR. J. Y. CRAWFORD.

First deliberately question your judgment as to what is best to be done in each particular case. Do not drift into routine work, but study up each case as it presents.

Before you do anything (except for the immediate relief of pain) study the case well, to see which is best adapted of the various methods possible. In the same case one man would say, "Certainly, save those teeth," but another might say, "Remove them all." The great danger lies in specialism—all of one kind. Too many good dentists are inclined to avoid mechanical dentistry. We do not care to come in competition with the cheap, no account mechanical dentist of the Cheap John class, and in that very way we throw the work into the hands of that class. We must do more work along that line ourselves if we would cut him off. We must put a stop to that class of men who work only for the dollars, and who pull out teeth indiscriminately because they do not know how to do any thing else with them.

If dental surgery does nothing else than indoctrinate the medical world with a knowledge of the danger lying in the indiscriminate destruction of the human teeth it will have accomplished a great work. I advocate the modern system of crown- and bridge-work. Since its introduction it has doubled the work of high-class dentistry. We need a better class of mechanical dentists. It takes an artist to make a good set of artificial teeth. I want to commend the recent developments in swaging metal plates over a plaster die. It can accomplish results that are perfectly marvelous. Nothing can approximate a lower plate of aluminum, swaged over a plaster die, with rubber attachments. If the teeth are imperfectly occluded the lower plate moves and slips about, and hits the mucous membrane here and there, till the tissue becomes hypertrophied, and finally there remains only a soft bed for the plate to rest on. But there is less absorption under an aluminum plate swaged between two metal surfaces and driven home on a plaster die. It fits so beautifully that you can bring out the rugæ in an upper plate. You have all seen those soft, mushy jaws, where all the anterior part is like a second tongue. But you will have no more of that if you will adopt the swaged aluminum. I earnestly recommend the process of swaging metal plates over the plaster die, and assure you you need not break the model.—*Cosmos.*

ARTICLE III.

EVIL EFFECTS OF MERCURY.

BY R. W. STARR, D. D. S., CHICAGO, ILL.

For the past four years I have been endeavoring to persuade my friends in the dental profession to break away from narrow prejudices, and to investigate for themselves by due process of observation and experiment whether mercurial preparations in the mouth were not in many instances very injurious to the individual having them. The results of my efforts in that direction are not as satisfactory as I could wish; though in some cases enough interest has been awakened to, in a measure, compensate me for my labor.

Dentists are but human beings, and as such are liable to make many grievous errors, and frequently content to follow out a certain line of thought and action, simply because they were taught at college that such things were true and right.

How many of the theories and ideas of fifty years ago are looked upon by the enlightened people of to-day, as being so utterly ridiculous, that it seems impossible that any one should have ever tolerated them.

Are we of to-day any the less liable to err than our forefathers ? I think not; therefore whenever a question arises it is much better to investigate the subject thoroughly and find out what is true for ourselves, than to decide and wrap ourselves in a mantle of conceit and self congratulations.

That a great many persons are to-day suffering from the effects of mercurial preparations in the mouth, in the forms of amalgams and red rubber plates, I am firmly convinced, six years of constant study and research in this direction having demonstrated to my satisfaction that such is the case.

There is no truer statement than that we are not at all times equally susceptible to the same things, a substance which may to day prove nourishing, may at some future time prove not only distasteful but absolutely injurious and even poisonous; all of which is due not to a change in the character of the substance, but to some developed idiosyncrasy of the individual.

The same is true of mercury. We may have it in the mouth for years without experiencing any bad effect, and later may develop a mercurial diathesis of which we are unaware, the result being we are under the influence of this most lasting drug, while we are in total ignorance of the fact.

I can hear the skeptical say, why this is impossible, there is not enough mercury in an amalgam filling to do any harm, and as for red rubber plates, never by any means has free mercury been obtained from it

In answer I would say, it is not the quantity but the ever presence that does the damage. With every mouthful of food, either liquid or solid, carried into the stomach minute particles of mercury goes down with it.

One peculiarity of its action is that any one suffering from a chronic ailment is much more susceptible to it than when they were not under chronic influence.

The effect upon the nervous system is marked and nearly always predominates.

I maintain that over one-half of those afflicted with what is commonly called facial neuralgia, can be greatly relieved by simply removing the mercurial preparation, and generally cured by antidoting the drug effect.

In throat troubles it is especially active. One case in mind: young lady æt. twenty, elocutionist, was repeatedly attacked by tonsilitis. When these came on, which were generally quite sudden, would lose her voice.

This condition lasting several days, making it impossible for her to keep her business engagements; had treated for it for three years, but beyond palliation could not make any advance.

She was finally sent to me by her physician, who had begun to be suspicious of her amalgam fillings. I removed twenty of these and replaced with oxyphosphate, later with gold. From the time the amalgam was removed, February 1, till the cavities had been refilled with gold, May 1, she had one attack; since then, two and one-half years, she has had no recurrence of the trouble. After I had removed her fillings her physician put her on medicine to antidote the mercury.

Another case: Mrs. B., æt. twenty-seven, had a vascular tumor on the gum, between the left central and lateral incisor about the size and shape of a large chestnut, which had been growing for eighteen months; she had it cut away and cauterized several times, but it always returned with renewed energy.

Her dentist had in despair recommended the extraction of the incisor teeth and cutting away of the alveolar process, as the only possible cure; this would necessitate the taking of an anæsthetic, which she would not consent to do, as she was then pregnant.

The tumor bled constantly and the hæmorrhage was worse at night than in the day, amounting to about two ounces of blood in twenty-four hours.

Her physician who was an old friend of mine, sent her to me to ask my opinion as to the necessity of an operation after a thorough examination and history of the case, recommended that the operation be postponed until last resort; removed eight amalgam fillings and antidoted the mercury, then a few days later cut away the tumor and cauterized thoroughly; at the expiration of two months all traces of the tumor had disappeared.

These are but two of many similar cases which I have had and cured of a reputed incurable disease; not that my medicine or treatment was any better or more thorough than others, but because I had eliminated a condition which was antagonizing all other drug effects, as mercury once it obtains foothold in the system will generally neutralize all other weaker drugs which may be administered. Any one who has had a patient who has been salivated, or taken much mercury in its many forms, will I think bear me out in this statement.

As to red rubber plates; if it is not the coloring matter but the nonconductivity of the rubber as some claim, which is injurious, why is it that such mouths will frequently give no trouble if black rubber is substituted; this has been done successfully many times.

I could cite many other cases but space will not permit.

For the benefit of those who wish to investigate this subject, I will state a few of the leading symptoms of mercurial effects; facial neuralgia, feeling of great lassitude, aching of the limbs, choking as if a lump in the throat, extreme sensitiveness to cold, desire to be warmer even when in perspiration, oppression as if a weight upon the chest, palpitation of heart upon a slight exertion, and profuse flow of saliva. Of these symptoms it is quite common to find five or six present in one case; though of course one can hardly expect to find them all at one time, still I have had several cases which did have all. Now I would like to ask what logical deductions are to be drawn from such experience?

If one has had such good results why cannot others? If I have succeeded in awakening in some of my readers a desire to investigate this subject thoroughly, I shall feel that I have been amply repaid.

Perhaps you will ask what I would suggest as a material for filling such cavities as are generally filled with amalgam; I would recommend gutta-percha, cement or tin where gold cannot be used, but at any rate use anything in preference to a material which contains mercury.

To those who are skeptical, who see more profit in derision than investigation, I would say that "none are so blind as those who will not see."—*Dental Review.*

ARTICLE IV.

CHARACTER IN OUR FEATURES.

BY A. O. HUNT, D. D. S., CHICAGO, ILL.

By close observation and careful records phrenology and physiognomy have been brought to such a state of perfection that by the outlines of the body, combined with its movements, it is possible to tell the character and disposition of an individual, as well as what those characteristics fit them for in the way of occupation. Palmistry also by the same careful observation and correct records can make some very close guesses as to those things which govern an individual, both past and present, by the lines, the hills and mountains as seen in the palm of the hand, in the shape and outlines of the fingers and thumbs.

Art and sculpture have by the same means been enabled to fix a classical standard of the ideal shape of the human form as seen in the external outlines on the surface of the body, exhibited by the position and action of the muscles. There has also been established a definite relation as to size in the circumference and length of parts of the body, as compared to each other.

The distance between the eyes, the length, width and position of the eyes, length of the nose, size of the mouth, etc., etc. And yet these features are so effected by their surrounding conditions that the human family is divided into five distinct races of people, and again for reasons into tribal and national characteristics, still retaining all the essentials of the human form. Wherever the study of the human form has been specialized both anatomy and physiology (form and function) have been well considered. It has engaged the best minds, and produced an extensive and valuable literature, such as "Darwin's Expression of Men and Animals," "Rimmer's Art Anatomy," various works on phrenology and palmistry, etc.—*Review.*

ARTICLE V.

REPORT OF A CASE OF CARCINOMA OF THE BUCCAL MUCOUS MEMBRANE WITH MICROSCOPIC EXHIBIT.

BY GEO. J. DENNIS, M. D., D. D. S., CHICAGO, ILL.

Read before the Odontographic Society of Chicago, Oct., 1897.

In presenting a report of a cancer of the cheek, it is not with the idea of presenting anything new, or unusual, but it is done because of the interest of the case to the writer, and because he believes that a description of the case and the operation for the removal of the tumor will be of interest to the members of this society; sufficient at least to serve as an excuse for the presentation of a case, and an operation at which he was only a spectator and not an active participant.

The operation for the removal of the tumor was performed at Wesley Hospital by Dr. Wm. E, Schroeder, of this city, assisted by Dr. S. C. Plummer, and it is through Dr. Schroeder's kindness that the patient and the microscopic exhibit are here this evening.

The report is as follows: Mr. R., aged fifty-four. Family habits, negative. Personal history: Habits: Uses tobacco moderately, smokes occasionally, chews on the left side and drinks alcoholics very moderately.

Previous diseases. The usual diseases of childhood, scarlet fever, measles, etc., and one attack of pneumonia. Otherwise has always been well.

Present illness. Began three and one-half months before the operation in the form of a small swelling in the middle of the right buccal mucous membrane. It grew rapidly with little pain and soon ulcerated. The odor from the mouth increased as the growth increased. During the last few weeks the patient noticed a swelling under the lower jaw.

Examination. In the right side of the mouth a tumor about three-quarters of an inch below the opening of Steno's duct of the size of a silver dollar, extending downward and involving the mucous membrane of the inferior maxilla. The surface was ulcerated, the edges indurated and irregular. Under the right inferior maxilla several glands, one of which was the submaxillary lymph gland, were palpated. The cervical glands were not enlarged. Submental glands were also negative. Of the teeth, the second bicuspid, first and second molars were missing, the others in good condition.

Physical examination, negative; the patient somewhat cachectic. Urine negative. A specimen was removed from the border of the tumor hardened in alcohol, formalin and water for six days, mounted, sections cut and stained. The microscopic examination revealed an alveolar carcinoma.

Preparation for operation. Consisted of a mouth wash for one week of a saturated solution of boric acid; on the day before the operation the patient was scrubbed, washed and shaved about neck and face; a wet boric acid dressing applied and only liquid food permitted.

The operation. Anæsthetic, chloroform during the early stages followed by ether, with a return to chloroform at the close.

To avoid paralysis of the facial nerve, the lower lip was split in the median line between two Billroth forceps to the lower edge of the chin by means of scissors and the incision carried on a line parallel with the lower border of the jaw to a point about three quarters of an inch from the mastoid process. The hæmorrhage was arrested by tying the facial artery, veins aud branches. The side of the cheek was then lifted, and the tumor and neighboring tissue three and one half by two inches removed, the incision being carried about three-fourths of an inch outside of the mass and as high as Steno's duct. The third molar, first bicuspid and cuspid were extracted, and the mucous membrane of the outer portion of the jaw and the alveolar process were removed. The hæmorrhage from the jaw was stopped by means of the Paquelin cautery. The submaxillary lymph and salivary glands as well as all the other submaxillary glands were then removed because adherent. The submental glands were searched for, but none were found. These are not always present (Henle).

A measure of the denuded surface was then taken with gutta-percha tissue, and a flap was dissected from the neck and infra-clavicular region leaving a pedicle sufficient for the nutrition of the detached skin. After this the flap was carried up and stitched into the denuded area of the cheek. The cheek was then brought forward to place and the first incision through the lip and along the jaw was closed by interrupted sutures, except that portion through which the flap from the chest was carried. Retention sutures were applied to the denuded area over the chest to diminish the wound as much as possible and the remaining uncovered surface received a covering of iodoform gauze. The wound was now dressed aseptically with the head drawn toward the right shoulder to lessen the tension on the flap. The dressings were changed frequently because of the passage of secretions from the mouth between the flap and jaw.

Twelve days later the flap from the chest was incised from its pedicle near the opening into the mouth and returned to its place on the chest; the separated portion was carried inside of the mouth and sutured to the mucous membrane at the side of the tongue, and the original opening along the jaw which had been only partially closed was now completely closed. The remaining uncovered surface of the chest was filled in with Thierch skin grafts.

It is due to Dr. Schroeder to state that another operation for the removal of the cervical glands will take place in order that metastatic growths in other parts of the body may be prevented.—*Dental Review.*

ARTICLE VI.

THE ETIOLOGY OF DENTAL CARIES.

BY D. M. CATHELL, D. D. S., CHICAGO, ILL.

Read before the Chicago Dental Society, June, '96.

Caries of the teeth is known to have existed before what we call historic times. Caries of the teeth has been known and recognized ever since history began. It is the most prevalent of all diseases known attacking the human animal. In 1754 Jourdain and Bourdet, two scientific men of the times, regarded caries of the teeth as caused directly by "inflammation of the bone" or dentine. Later, John Hunter says it is the most common disease known to the teeth and calls it "mortification and something else."

In 1806 Dr. Fox supposed the cause to be an inflammation of the lining membrane of the pulp chamber, or what we know now as the odontoblastic layer. The inflamed area cut off the circulation in the dentine and gangrene resulted.

Mr. Bell in 1825 considered inflammation of the tooth substance itself was the cause of decay and beginning just under the enamel, then penetrating toward the pulp. The cause of the inflammation may have been a cold or other slight disturbance.

In 1830 Koecker conceived that the portion of dentine killed by inflammation was dissolved out by acids, the result of a putrefactive process.

In 1835 Robertson claimed that caries was caused by acids formed by decomposition occurring at the exact spot of the breaking down tooth structure; also that caries always began on the outside surface of the tooth.

Regnard corroborated the claim of Robertson, namely, "the destruction of the teeth by decomposition."

Desirabode claimed that if acids caused caries the whole tooth would go rather than in sections.

John Tomes, the father of the histology of the teeth, proved dentine to be without blood circulation, hence there could be no inflammation, but proposed the chemico-vital theory of decay; that the tooth must lose all life sensation before the decomposition of lime salts. Tomes also gave us "the transparent zone," or zone of resistance, supposing that the pulp in trying to head off the approaching decay threw up breastworks in front of the encroaching enemy to prevent further ingress.

Dr. Bridgeman proposed the electric theory of decay dissolving away lime salts by the formation and action of electricity.

Dr. Watts' theory (chemical, similar to Robertson) differed some, namely, that caries of the teeth was produced by *mineral* acids, developed at the immediate point where the action was produced, and did the work of dissolution while in their nascent state. The acids proposed were hydrochloric, producing yellow decay; nitric, the white variety, and sulphuric, the dark or black caries.

During the years the last four or five named gentlemen were working on the theory of the origin of dental caries, Magitot, of Paris, was working along lines hoping to find a better cause than any heretofore suggested. He was a faithful worker, and advanced many points to help out in the solution of the work in hand. Just what his final conclusions were, I am not able to state at present.

In the middle of the present century micro-organisms began to be seriously connected with caries of the teeth. After 1875, a closer study of micro-organisms began, and the different species or nations were studied with more distinctness. In the latter part of the 60's Leber and Rottenstein discovered that the "granular matter" of Tomes and others were germs in the dentinal tubuli of carious teeth, as well as in the cavity already produced. But they did not know how closely connected they were with the causes of caries. They also told of a zone of resisting calcific deposit appearing to be thrown up to prevent further ingress of the carious agents. Later, about 1880, Mills and Underwood showed by a new staining process that this supposed "zone of resistance" was also micro-organisms, probably of a different species. Dr. Koch discovered a process of staining different species of germs with different colors, and Mills and Underwood took advantage of his discovery. Mills and Underwood proposed that decalcification was the result of acids; that the acids were secreted by the germs and the germs themselves destroyed the organic matter, using it as food. They did not prove the proposition.

About 1881, Dr. Miller instituted a series of experiments and proved that ptyalin had nothing to do with producing an acid condition of the saliva, as had been supposed heretofore, but that micro-organisms produced the acid. Miller also proved the physiology, so to speak, of micro-organisms: (1) That they had a digestive apparatus, (produced a digestive solvent); (2) that they were nourished, (assimilated food;) (3) that they eliminated poisons, (produced acids); and (4) that they had the power of reproducing their own kind. In other words, he proved that micro-organisms could take hold of certain materials, change the chemistry of them for their own uses and throw off again the changed material or chemical. Miller proved that the germs produced the special acid that dissolved out the lime salts of the teeth; that the micro-organisms fed upon or digested the animal or organic matrix. In other words, the function of the micro-organisms in the production of caries of the teeth was proven; also that the particular secretion dissolving the lime salts was *lactic acid.* Miller *suggested* that the process of enamel decay was similar to caries of the dentine; and such it has been proven to be by Black and Williams, the streptococci media germs forming about themselves a gelatinous substance and becoming attached to the enamel, under which the lactic acid is secreted, dissolving out the cement substance from between the rods, which soon fall out, allowing ingress of micro-organisms to the dentine.

Last winter Williams of England read a paper before an association of dentists in New York city on the "Pathology of Enamel," exhibiting the most beautiful microscopic specimens ever seen. They were so thin, some of them, as to represent only the thickness of a single enamel rod. Many of his specimens showed that destruction of enamel under the influence of micro-organisms was going on long before the naked eye, with the help of a fine pointed explorer, could detect a fault upon the enamel surface. His experiments have proven much that heretofore had only been surmised. Our own Black has done considerable work in the same line and many suggestions and thoughts that have been presented by him from time to time, within the last few years, have now been proven beyond a doubt to be facts by the scientific and positive display of Williams. Indeed, the thoughts and ideas and researches of the two men have been practically the same.

Williams showed distinctly, not once, but many times, that lactic acid may dissolve out the cement substance between the enamel rods, and one or more enamel rods drop out, and through the puncture in the enamel a large area of dentine may be affected, and yet the eye or the sharp point that the dentist may have in the way of an explorer is not able to detect any faulty spot upon the surface of the enamel at that point. Williams' specimens under the microscope showed it very distinctly.

The other questions are soon answered. "Why is caries so much more active in some mouths than in others?" "Well, why is the atmosphere in some rooms not so healthy as in others? The moisture or the juices of the body as exhibited in the mouth, in some are more healthful than in others, that is, they are not so corrosive, not so active, and it is the *surroundings* of the tooth that influence its destruction, nothing else.

"What changes take place where caries ceases its activity in mouths heretofore predisposed?" If we *knew* what changes, we would apply the remedy and *cause* the change in all mouths immediately and stop further decay. *We do not know it*; we will not know it for some time to come.

"Are there recognizable signs by which we can know whether or not caries will cease with advancing age?" Most decidedly not. We cannot prognosticate in that direction yet. If there are signs, we do not know them. In some mouths we find almost perfect teeth, but little decay. Where we would suppose from the general appearance of the patient that we would find rapid decay, the teeth are perfect. We find individuals strong and healthy to all appearances, robust in every way, with their teeth softening and dissolving rapidly. In mouths where we find the thin saliva without odor, which we would call from a physical examination, pure and healthy, the teeth are being dissolved rapidly. Again, in persons whose saliva is ropy, and we would suppose that it would be very deleterious to tooth structure, we find well developed, strong teeth that are not carious. In fact, we know a few things, and a great many other things we do not know.—*Dental Review.*

ARTICLE VII.

THE BLEACHING OF DISCOLORED TEETH.

BY J. E. NYMAN, D. D. S., CHICAGO.

Read before the Chicago Dental Society, June 1, '97.

In the consideration of this subject it may be well to consider first the causes of discoloration. In most of the cases that come to us the teeth have putrescent pulps in them, or it is an abscessed tooth that has been treated and the root canal has not been properly filled. One product of all decomposition of organic tissue is sulphuretted hydrogen, and that coming in contact with the oxyhæmoglobin of the blood forms a sulpho-methæmoglobin which is of reddish green tinge. A reddish green usually expresses the tinge of discoloration we find, because a reddish green is very much like a dirty brown. A strange occurrence which some of you may have experienced, is that if a patient happens to appear to you on one of your busiest days with a tooth that shows unmistakable signs of an abscessed condition, and you are able only to take the time to relieve that patient of the pain by drilling into the canal, and allowing it to discharge its putrescent contents, telling the patient to come in again in a day or two or three, as the case may be, you may be surprised when that patient returns on that second or third day to find that the tooth is discolored worse than it was when you first saw it. There is a reason for that change for the worse, and it is this : If during the action of the sulphuretted hydrogen on the oxyhæmoglobin of the blood oxygen be present the reaction is much more marked and the color formation much more decided, therefore in the case we have just remarked upon, in making a vent for the abscess we have also established an air passage by means of which the air containing oxygen has intensified the reaction of the sulphuretted hydrogen on the oxyhæmoglobin of the blood, causing more decided discoloration.

The causes of discoloration may be divided into two classes, organic and inorganic. One of the organic causes is that which I have just mentioned, namely, sulpho-methæmoglobin; another the oil of cinnamon when excessively used. These seem to comprise the organic causes. Now, strictly speaking, the causes that I am now about to give are not entirely inorganic, because organic chemistry has played some part in the chemical reactions of these, so to speak, inorganic causes. We will first consider iron.

Miller says that iron is the most widely distributed of all the metals in the human system, and it plays the most important part in the physiology of life, that he finds it present in the vascular tissues, in the pulp and in the pericementum. Now, then, if you come across one of those cases where there is little more iron than is normal in the blood and an abscessed condition has been established in addition to the discoloration from the sulpho-methæmoglobin, there will be a discoloration due to the sulphide of iron. Again, should the patient be suffering at the time this abscessed condition takes place from ptyalism, there would likely be present another discolorizing combination—sulphide of mercury. Then, again, there may be a little excess of manganese in the blood. In that case there might also be formed a sulphide of manganese. There may also be discoloration due to the sulphides of tin and silver, owing to the action of sulphuretted hydrogen arising, it may be from the decomposition of debris of food upon remnants of old amalgam fillings. Another cause of discoloration that I might also mention is that which may be due to the action of the medicaments used, upon the steel in the instruments used; and I believe Dr. Harlan has stated that there may be a discoloration resulting from the use of carbolic acid in the treatment of devitalized teeth. All of these sulphur combinations are of a dark color, varying from brown to black.

These complications tend to make a bad matter worse, although I frankly admit that it is almost impossible to tell just which of these causes has been most actively at work in any one case of discoloration, but it is highly probable that in the majority of cases that come to our notice, it is mainly due to the sulpho-methæmoglobin.

Now, just a word as to what bleaching is. The best definition that I can find is the one given by Dr. E. C. Kirk, in an article in the *Cosmos*, in which he defines it as "the reaction between a substance having color and some substance capable of so affecting the integrity of the molecule of the coloring matter as to cause it to lose its distinguishing characteristic, its color." There are two classes of bleachers, namely, the oxidizers and the reducers. The oxidizers are those which act by oxidizing the coloring material or extracting the hydrogen from it. The reducers acting in exactly the reverse; abstracting the oxygen from the coloring compound. As examples of oxidizers we may mention peroxide of hydrogen, potassium permanganate, chlorine and the chlorine compounds, and as reducers sulphur dioxide and oxalic acid. The ones most universally used are the chlorine compounds and the peroxide of hydrogen, although some use is made of oxalic acid.

Now, necessarily there must be some choice of bleachers, and the question is, which shall it be? Unfortunately for the oxalic acid process we are quite divided as to the exact action of oxalic acid on the structure of the teeth, as to whether it does or does not injure it. However, as I said before, the bleaching agents most used are the chlorine compounds and the peroxide of hydrogen solutions. The objections to chlorine and its compounds are that chlorine has a disagreeable odor, that it affects all steel instruments, that it is such an irritant to the tissues, to say nothing of the possible formation under some circumstances of hydrochloric acid. Personally I do not see how this can take place, but I have heard it mentioned as something that might happen with the use of the chlorine process. This leaves us only the peroxide of hydrogen solutions to consider, and they really seem to be the best of all, because oxygen is a bleacher of world-wide reputation and the decomposition of peroxide of hydrogen gives us nothing but oxygen and a residuum which is nothing more or less than water.

I might, in passing, speak of a very peculiar case which Dr. Sanger, of New Jersey, reported, in which, after successfully bleaching a tooth by the chlorine method, the tooth rediscolored. The only cause he could discover was that a proximal gold filling projected into the enlargement he had made in the pulp cavity. Then he made up his mind that this rediscoloration was caused by the chloride of gold. He said he removed the filling and rebleached the tooth, after taking precaution to wash out the chloride of gold stain, and then the tooth did not discolor again. It does not seem possible to me that this could have been the cause, because free chlorine will not affect gold. There must be a combination of the two acids, hydrochloric and nitric, popularly known as aqua regia, before chlorine will affect gold. I am inclined to think that that tooth needed another bleaching, and that it was not done thoroughly the first time.

Now, as to the method of procedure when a patient presents himself with a discolored tooth which he wishes bleached. In the first place, do not promise him too much for there are cases that cannot be bleached, at least cannot be bleached successfully. In the second place, after treatment and curing of the abscess, if there be one, fill the root canal well with gutta-percha or other material that will hermetically seal the apical end. Then enlarge the canal as you would to insert a post for a crown. Thoroughly cut out all the discolored dentine that you can without materially weakening the tooth, because in doing that you very effectually remove part of the discoloration, and leave less work for your bleaching agent to do. Now, the question presents itself as to whether we shall make use of our recent knowledge and appliances in editorial matters, or simply adopt the old time method of bleaching teeth. I prefer the modern method, as it is evident that the action of the electric current makes a freer and more abundant formation of oxygen that can be obtained under ordinary methods, and Dr. Morton's experiments seem to prove that the cataphoric action causes the oxygen to penetrate deeper than it would by ordinary osmosis. But I am very much in doubt whether to call the electrical process cataphoresis or electrolysis. Looking at it from some points of view it seems as if it were electrolysis. Looked at in the light of the experiments of Dr. Morton, of New York, it looks as if cataphoresis were the term for it. A very curious thing about which I am as much in the dark as is any one else is as to just how the oxygen does the bleaching under the action of the electric current. The oxygen has an affinity for the positive electrode and will collect there, while the hydrogen will be driven to the negative electrode. It may do the bleaching by expelling all the hydrogen from that discolored compound, and driving that into the tissues toward tho negative electrode, allowing it to be replaced with the oxygen, or it may be that the bleaching takes place owing to the fact of a constant accumulation of oxygen in the region of the positive electrode, giving such an excess that the tissues of the tooth take up some part of it. Which of these two theories is correct I do not know. There have been some appliances devised for bleaching the teeth cataphoretically, so to speak by Dr. Hollingsworth. They consist, first, of a rubber nipple, which is expanded by means of a nipple expander. After the rubber dam has been adjusted and the preliminary preparation of the teeth completed, this nipple is slipped over the tooth to the neck of it and the expander is withdrawn, leaving the tooth covered with the nipple. A little glass tube with a spiral platinum wire in it is then inserted into the nipple, closing over it and holding it fast. There are also two little hooks attached that are hooked over the fold of the rubber dam as it is stretched across the patient's face, and support the little tube. Take a tube of 25 per cent. pyrozone, which should contain two drachms of pyrozone, wrap it in a towel or napkin which has been soaked in ice water, open it by cutting off the tip with a diamond disk, and empty the contents into an ordinary glass tumbler. 25 per cent. pyrozone is an ethereal solution and an ethereal solution is a very poor conductor of an electric current. So add to this ethereal solution of pyrozone an equal amount of warm water, to which has first been added a grain of sulphide of zinc to increase the conductivity of this solution. The ether should then be evaporated by gentle heat until you no longer get fumes of it from the solution. The solution will then be aqueous instead of ethereal and will be ready for use. The stopper is now removed from the little glass tube. A double bulb syringe which I will describe has been devised for filling it. The further or second rubber bulb of this syringe is first collapsed and the point of the syringe inserted in the pyrozone solution and this second bulb is then allowed to fill with the pyrozone solution. A little platinum tube runs clear through this outer rubber tube into the second bulb; but the second bulb has no connection whatever with the first bulb. Attached to this first bulb is a rubber tube which envelopes the platinum tube and which projects down almost to the end of it; between these two tubes there is a space. Now, this first bulb is collapsed, the rubber point of the syringe is inserted in this little glass tube and the bulb released. The moment that the first bulb is released the air is drawn out of the glass tube into it, creating a suction which causes the space in the tube to be filled with the pyrozone solution from the bulb. If you attempted to force the pyrozone solution into the tube in the ordinary manner, the air pressure would be so great that you would spill most of it and put but a small quantity of it in the tube. The positive electrode which has been devised for this appliance has a clamp which fits around the neck of this glass tube, and comes in contact with the platinum coil of wire. When this has been attached the open end of the tube is closed by means of a stopper. Great care should be taken that the joint between the neck of the tooth and the rubber dam is hermetic; because if it is not the current will be leaking out around the mouth. The negative electrode is attached to the wrist. Now, when all these precautions and these various steps have been taken the current can be turned on very rapidly, because there is not the sensitiveness to contend with that there is in a live tooth. It is said that a current of the strength of twenty-five volts for half an hour will on an average do the work. I am very free to admit that the majority of cases in which I have tried this process I have not bleached to my own satisfaction in that time. I have done it mainly at clinics, where I do not have the opportunity of seeing the cases again. But I know that Dr. Stewart, of this city, succeeded in bleaching a tooth perfectly in that time by this method at one of the clinics. I have had some cases, however, that have been a success. It is said that if a milliampere meter records more than three-quarters of a milliampere before a twenty five volt pressure is reached it indicates that there is a leak somewhere, so great precaution should be taken about the joint at the neck of the tooth. After bleaching the cavity the tooth should be hermetically closed by cement and gold.

There is one objection to this appliance, and that is that it hides the tooth from view while the bleaching process is going on. But in point of fact, many bleaching operations have to be repeated two or three times before fully satisfactory results are obtained. However, it is claimed that the full action of the pyrozone is not evident until twenty-hours have elapsed, so that when the patient returns later the tooth may be found perfectly bleached, although when you dismissed the case it may have seemed to you to have been a failure. This thought has occurred to me : that probably not all of the cells in a discolored tooth are discolored at one time, and by bleaching out those that have been discolored the tooth regains its normal color on account of the large majority of cells which were not affected by the discoloring agent. If it were a fact that all the cells were discolored at one time, I do not believe that you would ever be able to restore the normal color to such a tooth. Consequently you will have some cases that will be failures in spite of all that you can do with them, due probably to the condition I have just spoken of, namely, that all of the cells of the tooth were affected by this discoloring agent. And even if you succeeded in bleaching such a tooth you would have as unnatural a color as it was before you bleached it. There are some cases in which a rediscoloration takes place owing to the fact that there are cracks in the enamel which allow the absorption of discolorizing agents from the mouth. I do not understand organic chemistry well enough to give you the chemical composition of the various discolorizing agents, or to be able to write out the chemical reaction which takes place between the discolored material and the bleaching fluid; in fact, there are many things about this subject that I would like to explain to you, but I really do not understand them myself.—*Dental Review.*

ARTICLE VIII.

SUCCESSFUL METHOD OF FILLING FAST DECAYING TEETH OF THE YOUNG AND ANEMIC.

BY C. BUNTING COLSON, D. D. S., CHARLESTON, S. C.

Read before White Mountain Meeting, July, 1897.

It is my belief that we are on the eve of discovering a specific which will prevent disintegration of the teeth of the young and of those in poor health, other than by the merely mechanical and prophylactic measures of today. Before explaining my own methods of procedure, I will discuss briefly some of the processes and materials which have given us particularly satisfactory results in the the mouths of the young and anemic, and especially of nursing mothers. The most useful materials, here named in the order of their usefulness, have been soft gold, gutta-percha, tin, lead, cohesive gold, oxyphosphate of zinc and oxychlorid of zinc. The various processes upon which we have depended have been fillings with one or more of the above materials; cleansing or polishing of the enamel; or completely surrounding the teeth with metal as with a band or crown, thus protecting them from the secretions of the mouth. Therapeutically we have advocated prophylaxis by friction with the brush, silk, mouth lotions and dentifrices, and cauterizing with nitrate of silver of surfaces preventing superficial caries.

In which direction shall the dental student of the future seek for that specific which shall be to dentistry what Jenner, Pasteur, Koch, Roux and others have given to the general practitioners of medicine? Preventive dentistry may eventually rely upon a process, certainly not upon any particular filling material. It might be possible to permanently preserve human teeth if a method could be discovered by which we could electrically deposit gold, silver, nickel or platinum over all the surface of the teeth of the young, preventing by such deposit caries in fissures, and the attacks of micro-organisms; but as we can scarcely hope for this, and as filling materials can only retard and partially prevent further progress of rapid decay, and as such disintegration is pathological, our future dependence must be upon therapeusis.

It has long been noted that pure soft gold apparently acts better than any other material used in preventing subsequent disintegration of the teeth filled, even where the manipulation has been faulty. It is not uncommon to find a leaking or loose gold filling of soft gold remaining in a tooth for years and preserving it, which would seem to prove that its action depends upon some therapeutic property and is not due to perfect adaptation. This can not be said of cohesive gold.

We have similar preservative properties in tin and lead, but it is not always wise to use these materials in the teeth of the young because of the discoloration which they frequently cause. Copper amalgam has given good results under certain conditions, of which, however, as yet we know too little to be able to utilize this material, which the lack of knowledge as to when and where to use it renders most unreliable.

We have fairly good results from gutta-percha as a temporary expedient, and here again we have an action which is apparently therapeutical rather than mechanical. When well manipulated gutta-percha often serves a permanent purpose, and even when poorly placed frequently gives better results than could be obtained with any other material.

Therapeutics has furnished us with some good preparations for the prophylaxis of the mouth, but none are specific, and the mouth being an ever washed cavity, the effect of the most powerful agent is soon lost. In many mouths the teeth are covered with a viscid, thick, clinging deposit, not very soluble and not easily removed, and which is not penetrated by any ordinary or even extraordinary germicide or antiseptic. Wash a child's mouth with the most potent of these agents yet known, and we still find under the felt-like pads an abundance of thread-like bacteria.

We have several mechanical processes which are valuable in combating the early stages of decay. When first detected, if we thoroughly cleanse the surface and polish the enamel with hardwood polishers, we are frequently able to abort the process of decay. We also have a reliable agent in nitrate of silver, especially for deciduous teeth, where it is of great advantage in retarding the progress of disintegration of the enamel, and, except that it leaves a coal black stain, it would be exceedingly valuable in dentistry.

I will now briefly describe my method of preserving rapidly decaying teeth in the mouths of patients between the ages of ten and twenty, and also in young mothers and anemics. We find similar conditions in nearly all these cases, except that in children we have a larger pulp cavity and less dentin between filling and pulp. Many years ago I became impressed with the idea that the enamel and dentin may be affected far beyond the point usually reached with our excavators. I was forced to this conclusion by observing the recurrence of decay around and beneath fillings. I have frequently cut away more tooth substance than is usual and obtained success, though I have occasionally lost a pulp from the proximity of the filling to that organ, even when care had been taken to line the cavity. I have also found that in many of these cases in the course of time the vitality of the pulps became impaired, the pulps eventually dying. I therefore became convinced that it was not altogether the proximity of the cement lining nor of the gold which caused this, but rather the infected condition of the dentin between the filling and the pulp, and I have proven the correctness of this theory by obtaining good results through proper treatment prior to filling. Having satisfied myself that the dentin of decayed teeth is affected more deeply than is usually believed, I became assured that soft gold would be the best material for preserving the teeth and preventing subsequent recurrences of decay.

My present method of filling rapidly decaying teeth is as follows: I demand sufficient space in which to work. If the cavities are in approximal surfaces, I open by packing cotton, cork, or sometimes rubber, and then keep the teeth apart with a peg of wood until the soreness leaves. With the rubber dam adjusted and the cavity well dried, I attack the enamel edges with a very sharp chisel or excavator, but prefer to use a small, fine cut fissure drill or bur. I cut back the enamel well before I proceed to excavate the cavity. I excavate the dentin with sharp excavators, using only hand instruments, as they are better controlled, and less painful if sharp. After as thorough an excavation as judgment will permit, we are frequently compelled to leave a small pad of decay at the bottom of the cavity for fear of exposing the pulp. Believing that the apparently normal dentin and enamel are not so healthy as they seem, of course it is not satisfactory to leave this pad of decay, which is composed of particles of broken down dentin, micro-organisms and other septic material absorbed from the saliva; nevertheless, we are forced to do so. To fill over it with any material without first taking necessary precautions would be fatal to the success of the permanent filling. It is the bacteria thus left within the cavity which destroy many teeth, however carefully lined and filled.

After excavating, my next step is to dry out the cavity with warm air—and I frequently do this while excavating as it reduces pain to a minimum—which should be a slow stream of air, not hot, but just warm enough to drive back the serum and evaporate the contents of the tubuli to some extent. I then bathe the cavity with a drop of a caustic soda solution which is instantly sucked up by the dry tubuli. The soda penetrates the tissues of the tooth to a considerable depth, neutralizing all the acid that may be present in the tooth itself or in the pad of decay. Again drying this out and applying warm air as before, I flood the cavity with oil of cloves. Why oil of cloves? I have tried nearly all the germicides that I felt justified in experimenting with, and I find that oil of cloves is the most suitable and efficient. After absorbing out the surplus with bibulous paper I again apply warm air. Oil of cloves has the peculiar property, when heated to the point of volatility, of penetrating; and will pass deeply into the tubuli and so embalm the substance of the pad that no fermentative action can occur.

Now I return to the enamel border. Treatment of this margin is the most important of the entire process of filling this class of teeth. I employ some original instruments made of carborundum pencils ground down and pointed so that they resemble a well-sharpened lead pencil. I have these of fine grit and placed in porte polishers. With these fine points I grind my enamel well around to the full extent of the diameter of the cavity, so that there shall be no overhang to any portion near the surface. I now trim the extreme outer edge of the enamel, surrounding the cavity to the outer bevel or counter-sink, similar to that which is made in flushing a screw head in cabinet work, but not at so acute an angle. All this is done with the small carborundum pencil points. Then I line cavity with balsam, believing that I seal within the tubuli sufficient essential oil to prevent the development of any fermentative decomposition in the pad. While the balsam is drying I polish my beveled enamel border.

I desire to make a few remarks on polishing enamel, because the practice does not seem to be so generally appreciated as it was twenty years ago; It was formerly the common practice in the treatment of superficial decay, after removing the roughened surface, to polish the enamel carefully, and I have always been impressed with the ability of these fresh surfaces to resist the attacks of the agents of decay, which seem to prefer a roughened enamel surface. When we find decay to be general throughout a mouth, we invariably may note that the enamel surfaces are far from having the high polish which we see in a healthy mouth, therefore, I think it very essential to perfectly polish these enamel borders. I use for this purpose points of hardwood, mostly seasoned hickory and boxwood sharpened like pencils, held in the porte polisher bits. Running my engine at a rapid speed, I polish the beveled enamel borders of my cavity until my mouth mirror shows me that they shine and reflect light. This is not difficult nor painful, nor does it require much time, but it is very necessary to a perfect operation.

Bear in mind that I am writing of teeth in which we may expect a recurrence of decay. In such cases I ordinarily use a cement lining, especially in very young mouths, to avoid the necessity of placing gold in contact with the dentin, but this must be done with judgment and depends upon the depth of the cavity. If I use cement I anchor in it several pellets of cohesive gold as a foundation, in preference to deep anchorages, but I do not fill the entire cavity with cohesive gold. When I have the cavity about two-thirds filled I place around, as I work, little pellets of pure soft gold about No. 4, folded from four to six times. These I lay along the enamel borders, and they are held in place by the cohesive gold as it is built over them until I have all the enamel edges of the cavity overlaid by these soft gold pads beyond the bevel. I then complete the filling with cohesive gold and burnish thoroughly.

It may be asked, why not fill with soft gold entirely? The answer is that soft gold fillings to be well inserted require much pressure and malleting. The enamel of the teeth of the young is not dense enough to resist such pressure. Again, I cannot finish to a certainty to the outer edge of the bevel of the enamel with soft gold, and I also wish to restore the approximal relations of the teeth by contouring. Nevertheless, I want soft gold on the beveled polished edges, covered by cohesive gold well burnished down, and I have no fear of bacteria destroying the tooth so polished. A few children may not have the patience or endurance to submit to this method, though rarely am I obliged to adopt any other.

My next favorite filling is gutta-percha, and I prefer the common pink base plate gutta-percha to any of the white preparations, and I use it whenever I can, where its color does not make it objectionable. To fill teeth with gutta-percha, especially in the mouths of small children, is an art and requires as expert a hand as any gold filling, and, although it can be done much more quickly, is difficult. In the posterior teeth I always use it below the gum margin and almost invariably touch the bottom of the cavity, be it enamel, cementum or dentin, with a crystal of silver nitrate, and then insert the gutta-percha. In this manner I have saved teeth which, without the use of the silver nitrate, could not have been certainly preserved.—*Items of Interest.*

ARTICLE IX.

A USEFUL DISINFECTANT.

In its issue of December 11, the Maryland Medical Journal gives some interesting details as to the use of formaldehyde gas, the disinfectant which has recently come into favor. The disinfection of rooms and clothing by means of the fumes of sulphur and by solutions of carbolic acid and chloride of lime is generally very difficult and often ineffective. The sulphur fumes lack power of penetration, being inoperative unless the air or clothing to be disinfected is damp. The other disinfectants named are effective only when the infected object is soaked in their solutions. But for formaldehyde gas it is claimed that it will not only destroy any disease germs left in the air of a room by a recent patient, but will also destroy any germs which may have remained in the folds of draperies or hangings, and even cloths hung up in the room can probably be rendered free from infectious bacteria. The gas has the advantage over other substances, it is said, that it does not alter or injure the colors of fabrics, furniture or other articles of household use. The disinfectant is commonly sold under the name "formalin," which is a 40 per cent solution of formaldehyde gas. The formalin is heated in a vessel with chloride of colcium, with the result of disengaging the gas in a dry state. By means of a metallic tube the gas is then introduced into the infected room through the keyhole. By way of preparation all openings should be stopped so as to confine the gas closely within the space to be disinfected. A quart of the formalin should be evaporated for each 1,000 cubic feet of space. The gas is not poisonous, but irritates the eyes and throat. A room fumigated with it should remain closed for twenty-four hours. "Germs of all the various diseases," says the Medical Journal, "such as cholera, typhoid fever, bubonic plague, anthrax, tuberculosus, diphtheria and the germs of ordinary inflammation have been exposed in closed rooms to the action of this gas. Pieces of cloth soaked in cultures of disease bacteria have been exposed freely in the room, or covered by blankets and carpets. Germs have been placed between the leaves of books, put into envelops in the pockets of clothing, or even placed in the interior of mattresses. It has been found that after exposure to this gas, not only were the germs on the surface destroyed, but if enough gas was present the germs covered by blankets or even in the depths of a mattress, were killed." The gas is already being widely used for routine disinfection.

Editorial, Etc.

DENTAL EXAMINERS OF MARYLAND. VALIDITY OF THEIR APPOINTMENT AND THEIR ACTIONS QUESTIONED IN A SUIT INSTITUTED.

The validity of the act of 1896 providing for the appointment of a State Board of dental examiners is questioned in a suit instituted in Circuit Court No. 2, yesterday by Will Gavitt Bradford, through A. S. J. Owens, attorney. Mr. Bradford applied for an injunction restraining the dental examiners from enforcing the act in question as far as he is concerned.

In his bill of complaint Mr. Bradford states that the degree of doctor of dental surgery was conferred upon him March 9, 1892, by the Ohio College of Dental Surgery, the second oldest dental college in the United States, and ranking second to none in this country. Subsequently, he states, certificates entitling him to practice his profession in Ohio and Kentucky were issued him by the dental examiners of those States, and he was also admitted to practise in Arkansas.

Mr. Bradford claims that his diploma entitles him to practice dentistry in Maryland. He arrived in Baltimore recently, he states, and was granted by the examiners a temporary certificate entitling him to practice dentistry from October 21 to November 11, 1897. On November 11 he was examined as to his qualifications, and he asserts that he knows he answered correctly 75 per cent. of the questions asked him, and that his mechanical and laboratory work was up to the required standard. Notwithstanding this, the bill states, he was refused a certificate, but the president and secretary of the board of examiners declined to inform him wherein he was deemed deficient.

He was told that he could not practice dentistry in Maryland, and that if he did so he would be arrested.

The act of Assembly under which the examiners were appointed is alleged to be unconstitutional, as it vests arbitrary and unlawful power in the board, whose action has deprived Mr. Bradford of a property right and privilege without due process of law. To state that Mr. Bradford is not qualified to practice dentistry, or his arrest for so practicing contrary to the provisions of the act, it is alleged, would do him irreparable injury. Even if the act is valid, the bill asserts, it does not apply to Mr. Bradford, as those holding certificates issued prior to its passage are excluded from its provisions.

The court is asked to enjoin the dental examiners from giving public or private notice that Mr. Bradford is not authorized to practice dentistry in Maryland, from enforcing the act in question against him and from causing his arrest if he does practice dentistry. An order signed by Judge Stockbridge requires cause to be shown by December 31, why the injunction should not be granted.

The board of examiners is composed of Drs. Edward P. Keech, President; J. C. Heuisler, Secretary; A. B. King, William T. Kelley, A. C. McCurdy and Edward Nelson. The penalty for violation of the act is a fine of from $50 to $300.—*Balto. Sun*, Dec. 23, '97.

Obituary.

DR. WILLIAM S. McDOWELL.

Dr. William S. McDowell, a well-known dentist, died January 2nd, 1898, at his home, 1005 West Lafayette avenue. He had been in failing health for about five years. About that time he fell on the ice and broke his hip, and later retired from active service. The cause of death was pneumonia, together with a complication of diseases.

Dr. McDowell was born in Philadelphia and was seventy-six years old. He commenced practice in Philadelphia and New York City in 1854, and soon after came to Baltimore to practice. His contemporaries were Dr. Chapin Harris and Dr. C. O. Cone, the latter of whom he succeeded in practice in 1858. He had patients from Massachusetts to Cuba. At the beginning of the war he was interested with other Union men in retaining Maryland in the Union, and was one of the organizers of the Union League, the first organization of its kind in the country. He was elected its first president.

Dr. McDowell was an able and conscientious dentist, a prominent member of the Baptist Church, and a respected citizen in the community where, for so long a time he practised the profession of dentistry.

The character of his operations were always an evidence of his professional skill and ability.

IN MEMORIUM.—DR. JOSEPH R. WOODLEY.

Entered into rest on the 29th day of September, 1897. A distinguished citizen, known and honored among his fellow-men, and among the civil, social, Christian, and professional organizations with which he was associated in his native Southland. A grand and good man has passed away, who was as warmly loved as he was widely known, —Dr. Joseph R. Woodley, of Portsmouth, Virginia, "Has crossed over the River and rests under the shade of the trees."

The annals of the professional and other associations and organizations with which Dr. Woodley was connected are darkened and shadowed by a mortality that has marked a year long to be remembered as a sad and fateful era in the history and records of those fraternal bodies.

The "Grim Reaper" has chosen for his remorseless harvest a startling number of our most honored and esteemed associates and fellow-craftsmen, and of all who have fallen before his ruthless blade none was more beloved, none could be more keenly lamented, none was more highly distinguished for the qualities and attributes that mark and make up the "highest style of man," and we may truly and justly add that none occupied a more enviable position in the profession, which he honored and adorned, than the subject of this memorial.

Socially, Dr. Woodley was known and noted as a great-hearted, brave, and chivalrous gentleman; whose principles were above cavil or criticism, and whose impulses were all general and noble. As a patriot and soldier he bared his bosom to the leaden hail of battle, and from first to last, with the gallant band he led, was always at his post, and between the enemy and the land he loved. Such was Dr. Woodley's skill and dash and daring as a soldier, and so important were the services he performed that he won the recognition and approval of his great captain, Robert E. Lee, expressed in a dispatch, or order, from "Headquarters," through Col. Chas. S. Venable, of his staff, which paper is now in the hands and keeping of the family.

In the varied relations, conditions, and phases of human life it would be difficult, if not impossible, to find a character more symmetrical and well rounded than that of our departed friend.

Professionally, Dr. Woodley measured up to the requirements of the highest positions and offices in the gift of his fellow-craftsmen. Scholarly, skillful, scrupulously and thoroughly faithful in all his work, his gentle ministrations and tender sympathy with his patients won and attached to him a "clientele" perhaps as large as was ever held by a Virginia dentist. In the work of the conventions, congresses, and professional associations, Dr. Woodley was always noted for his ability, enthusiasm, and efficiency; for the broadness of his views and the soundness of his judgment. The Virginia State Dental Association owes its existence and perpetual usefulness largely, if not wholly, to his energy and influence at a critical period in its history, and one of the grandest addresses ever delivered [illegible] ntal association was made by Dr. Woodley in the city of Richmond, when he rescued that organization from impending wreck and dissolution. And his contributions have enriched the transactions of the "Southern" and neighboring associations, notably of "North Carolina," to which he was as much devoted as to those of his own native state.

Southern dentists and Southern dentistry have sustained a great and irreparable loss in the death of this noble example of our craft and calling, a bereavement that is shared with the stricken family and wide circle of his sorrowing friends and neighbors, "For none knew him but to love him, none named him but to praise." The great outpouring of the people at his burial and the manifestations of grief and sorrow betokened the high esteem and fond affection in which he was universally held.

Dr. Woodley died, aged sixty-eight years and eight months, and had actively practiced his profession forty-three years. He leaves a widow and three children,—a son and two daughters,—to all of whom we offer our tenderest sympathy and sincere condolence, and for whom we invoke the compassion, the comfort, and the solace of "Him who holds our destinies in the hollow of his hand" and who "tempereth the wind to the shorn lamb." Another "Prince and great man has fallen in our Israel;" we shall see his face and hear, his voice no more, but in our hearts his character, his example, and his memory will be cherished and embalmed while we live to worship truth, to honor virtue, and to find in noble manhood an inspiration and a joy.—W. W. H. THACKSTON Farmville, Va.—*Dental Cosmos.*

DR. S. C. WILKERSON.

Died, at his home, in Tuscaloosa, Alabama, October 15, 1897, Dr. Sim. Cornelius Wilkerson.

On the 25th of February, 1896, Dr. Wilkerson was stricken with paralysis, from which he never entirely recovered and was almost helpless until his death. He was born in

Foster's Settlement, Tuscaloosa county, Alabama, May 11, 1839. After a course at the University of Alabama he began the study of dentistry under the pupilage of Dr. E. H. Cogburn, in 1857, attended a course of lectures at the Baltimore College of Dental Surgery (session 1858-9), and began the practice of his profession in Tuscaloosa the following autumn. At the opening of the Civil War he was a member of the "Warrior Guards" of Tuscaloosa, with which company he was called into the Confederate service as a private. In the early part of 1861 he returned to his native county and, with three others, organized a volunteer company, of which he was elected first lieutenant, and this company formed a part of the eighteenth Alabama Infantry. He was promoted to the rank of captain early in the war, and was captured at the battle of Missionary Ridge, after being slightly wounded. He was a prisoner of war on Johnson's Island about eighteen months, until the close of the war, when he returned to Tuscaloosa, and resumed his practice August 5, 1865, which was at once successful and lucrative. He retired in 1870 to engage in business in New Orleans, La., but again resumed his practice in Tuscaloosa in 1879, and continued there in active professional work until he retired, which he did shortly before his attack of paralysis. He was a member of the Alabama Dental Association, which body elected him a delegate to the American Dental Association and the National Dental Association sessions, which convened in Boston and New York City, respectively, in 1880, neither of which meetings he could attend. During his course of a large practice he had several dental pupils who afterward attended the Baltimore College of dental Surgery. During the war he married Miss Nannie Bryson, an accomplished lady of Macon, Mississippi, who survives him.

Early in life he joined the Baptist Church, and continued a faithful member until his death. He was an affectionate husband, son, and brother; fond of his profession, a good and active citizen, and highly esteemed by all who knew him. —*Dental Cosmos.*

THE LATE DRS. FRANK ABBOTT AND L. G. INGERSOLL.

The following resolutions were passed at a meeting of the Chicago Dental Society, October 5, 1897.

WHEREAS, again we are called upon to record the name of a distinguished American dentist among those whose life work is finished and whose achievements form a conspicuous part of the history of dentistry the last quarter of a century.

The life of Dr. Frank Abbott was one of great worth to dentistry in America. During a period of about thirty years he was at the head of the New York College of Dentistry, and with this institution—one of the foremost in our country—his name will ever be inseparable.

Dr. Abbott was honored by election to the presidency of the American Dental Association, the Association of Dental College Faculties, and other bodies with which he was connected, and was recognized as one of the leading men in the profession.

Resolved, That in the death of Dr. Frank Abbott the dental profession has lost a member whose affiability won him our friendship, and whose earnest efforts in advancing dentistry among practitioners and as an educator placed him among the foremost men in the profession; therefore, be it

Resolved, That the Chicago Dental Society deeply regrets the untimely death of Dr. Abbott, and conveys herewith its sympathy to his family in their bereavement.

Resolved, That a copy of these resolutions be spread upon our records and a copy be sent to the dental journals and to his family.

WHEREAS, The change so rapidly taking place among the pioneers of our profession has been conspicuously marked in the death of Dr. L. G. Ingersoll, of Keokuk, Iowa.

Dr. Ingersoll was a leader in the profession and contributed largely to its literature. His standing as a man of broad education gave him a prominent place among educators and commanded the attention of all audiences which he addressed. Dr. Ingersoll was not only a scholar, but he was an earnest worker and an eloquest speaker.

Resolved, In the death of Dr. Ingersoll the profession has lost another distinguished member, whose life work was in the interest of a higher educational standard.

Resolved, That a copy of these resolutions be placed on the records of this Society and published in the dental journals, and that a copy be forwarded to his family.

TRUMAN W. BROPHY,
J. H. WOOLEY,
C. S. CASE,
Committee.

Bibliographical.

THE AMERICAN TEXT BOOK OF OPERATIVE DENTISTRY. In Contributions by Eminent Authorities. Editor: Edward C. Kirk, D. D. S., Professor of Clinical Dentistry in the University of Pennsylvania. Publishers: Lea Brothers & Co., Philadelphia and New York. 1897.

The appearance of a valuable addition to dental literature is always received with pleasure and satisfaction by those who are sincerely interested in the progress of dental science. The American Text Book of Operative Dentistry is such a work, and also one that must add to the reputation of the editor, as well as of those whose labors have assisted him in the preparation of this useful and well written treatise. Consisting of 702 pages of text and 751 fine illustrations, it cannot fail to be a useful study for both student and practitioner.

The contents consist of the following contributions which are well written, and their arrangement worthy of high commendation:

Microscopic Anatomy of the Human Mouth, by Alton Howard Thompson; The Embryology and Histology of the Dental Tissues, by R. R. Andrews; The Examination of Teeth Preliminary to Operation—Methods, Instruments, Appliances—Recording Results, etc., by Louis Jack; Preliminary Preparation of the Teeth—Removal of Deposits and Cleaning of the Teeth—Wedging—Other Methods of Securing Separations—Exposure of Cervical Margins by Slow Pressure, etc., by Louis Jack; Preliminary Preparation of Cavities—Treatment of Hypersensitive Dentine by Sedatives, Obtundents, Local and General Anesthetics—Sterilization, with a brief Consideration of the Physiological and Therapeutic Action of the Medicaments used, by Louis Jack; Preparation of Cavities—Opening the Cavity—Removing the Decay—Shaping the Cavity--Classification of Cavities, by S. H. Guilford; Exclusion of Moisture—Ejection of the Saliva—Application of the Dam in Simple Cases, and in Special Cases presenting Difficult Complications—Napkins and other Methods for securing Dryness, by Louis Jack, The Selection of Filling Materials with reference to Character of Tooth Structure, Various Oral Conditions and Location, Depth of Cavity and Proximity of the Pulp—Cavity Lining, with its Purposes, by Louis Jack; Treatment of Fillings with respect to Contour, and the Relation of Contour to Preservation of the Integrity of Approximal Surfaces, by S. H. Guilford; The Operation of Filling Cavities with Metallic Foils and their Several Modifications, by E. T. Darby; Plastic Filling Materials—Their Properties, Uses and Manipulation, by H. H. Burchard; Combination Fillings, by D. M. Clapp; Inlays, by W. E. Christenson; The Conservative Treatment of the Dental Pulp, by Louis Jack; The Treatment and Filling of Root Canals, by H. H. Burchard; Dental-Alveolar Abscess, by H. H. Burchard; Pyorrhea Alveolaris, by C. N. Peirce; Discolored Teeth and Their Treatment, by E. C. Kirk; Extraction of Teeth, by M. H. Cryer; Extraction of Teeth under Nitrous Oxid Anesthesia, by J. D. Thomas; Local Anesthetics and Tooth Extraction, by Louis Ottofy; Management of the Deciduous Teeth, by C. L. Goddard; Orthodontia Exclusively as an Operative Procedure, by C. L. Goddard; The Development of Esthetic Facial Contours, by C. S. Case.

This work cannot fail to please the most fastidious, and must become a very popular treatise and is a worthy companion of the American Text Book of Prosthetic Dentistry.

Monthly Summary.

OFFICE DROWSINESS.—"Some men are quite martyrs to office drowsiness," a physician remarked the other day. "Any monotonous sound near them, the hum of traffic outside, or even the scratching of a clerk's pen is sufficient to induce a feeling of sleepiness which it is almost impossible to resist."

The worst of it is that this symptom is so seldom regarded as anything serious, though I have known it to be the beginning of critical mental trouble. For more often, however, it is merely the effect of constitutional eccentricity though in either case a few simple remedies might be tried with advantage.

For instance, I always advise the old indigestion cure—a glass of hot water—when the feeling comes on. To keep the eyes tightly closed for three or four minutes and then bathe them in very warm water often gives relief at once. And another good idea is to lower the head for a few seconds to a level with the knees. Above all, one should never give in to the feeling of drowsiness by taking a short nap in the hope of waking up brighter after it.

At the same time the condition of the office might be looked into. The slightest defect in ventilation will often cause one man to be affected by office drowsiness, even though other people in the same room feel nothing of it whatever.—*Tid-Bits.*

THE TIME was when many of the leading dentists of this country were, on what they considered to be unassailable scientific grounds, opposed to the use of amalgam, and opposition to it was the leading thought of most of the early societies. Every society that actively opposed the use of amalgam has ceased to be. Men of enlightened minds insist on doing their own thinking, free and untrammeled, and in a mutual society they insist on, without wide limits, the right to express, without being thereby made objects of ridicule or offensive remarks, their own opinions. Any society, which either by rule or license abridges this right does so at its peril.—W. H. Trueman, in *Review.*

MOST of the dentists, particularly the young men, are using the engine entirely too much. I do not wish to have the impression made that I do not use the engine at all, because I do, and I would not like to be without it. I use a sharp excavator with a handle about six inches long. I clean out my cavities with it. I use the engine in the preparation of some cavities. If I want to cut out a fissure of some kind, or to cut tissue, I use the engine for that, with fissure drill or bur.—Dr. Templeton, in *Review.*

DEAFNESS.—It has taken the medical world many years to discover that loss of hearing is almost invariably caused by some disease of the throat or nose or oral cavity. But very recent researches in these fields have demonstrated this fact beyond question, and it is now admitted by the most advanced medical men that, aside from the rupture of the ear drum, there is scarcely a symptom of defective hearing that is not traceable to the condition oi these cavities.—*Practitioner.*

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ARTICLE I.

THE STANDARD OF THE NATIONAL BOARD OF DENTAL EXAMINERS.

In this number we publish the circular letter of The Committee on Schools of The National Board of Dental Examiners, with some of the correspondence which it has elicited. We do this because we believe it to be matter that is of general professional interest, which cannot be too widely circulated. Every dentist should have placed before him all the facts, that he may be able to judge as to which side is right, and which course will best subserve the interests of higher education. Each of the three college answers presents some special view of the subject, and so all are printed. That of the Chicago College of Dental Surgery contains matter that is especially worthy careful consideration. It is a fact that some of the State Boards have licensed to practice Freshmen students, and those who have been "plucked" by the colleges. They have granted certificates to those who were too ignorant and uneducated to be received into any respectable dental college, and who had been refused matriculation. In this direction lies enough of needed work to occupy the exclusive attention of the National Association of Dental Examiners for years to come. Let that body expend some of its surplus energy in defining the duties and raising the standard of the State Boards. Then will they be more attentively listened to when the members desire to be received as the censors and supervisors of the colleges. Soldiers are not placed in command of an army until they have demonstrated their capacity in subordinate positions, and shown that they are fit to exercise authority. The present agitation, brought about by the unwarranted action of the Examiners Association, will certainly eventuate in good, for it has called attention to the great deficiencies and imperfections of that body. It must reform itself in some particulars, or it will never again be received, even as the coadjutor of the National Association of Dental Faculties, or be listened to with the respect that it should command. Perhaps, as Prof. Brophy suggests, the National Association of Faculties will mark out a course for it to pursue, but it will propably be only at its own request, for there is no disposition to follow the disrespectful and vicious precedent which it has established.

The Secretary of the Committee on Schools of the Board of Examiners seems surprised that the colleges which have a respectable standard for qualification of matriculants should decline to accept that which is presented to them. He does not appear to comprehend that the objection is not to the requirements, but to the assumption of the right of an Association like that of the Examiners to *demand* the acceptance of any standard whatever from the National Association of College Faculties. The requirements themselves are below those of the colleges whose answers are printed. Yet they cannot be accepted, because that would admit the right of the Examiners Association to impose conditions upon the colleges. This prerogative once conceded to a body in which the colleges have no representation, might be but an entering wedge for the grossest kind of abuses. There is no knowing where the exactions would end. The accountability of the colleges to any body whatever outside those acting under the responsibility of the courts of law, carries with it the gravest dangers to their integrity, because it threatens unknown and unforeseen calamities. This does not seem to have been perceived by some who have counseled acceptance. The patriots who threw overboard the tea in Boston harbor were severely condemned by certain classes of the people for taking such violent measures to evade the imposition of an insignificant tax. It would have been so much easier to pay the small sum demanded than to raise a war of rebellion. But if compliance had then been made, there would have been no American nation, and the people of England, as well as of this country, would have been the slaves of an absolute monarchy, for one aggression would but have led to another. It is in this view that the colleges have resisted the impudent attempts of the Examiners to impose a standard upon them, and to dictate as to the methods in which they shall be conducted.

The schools do not demand exemption from legal restrictions. They only protest against the domination of irresponsible bodies. There cannot be found an instance in which a college, or a college faculty, has in any way whatever attempted to resist even stringent legal restrictions, provided they were in any sense fair. College men have been foremost in moving for proper legal supervision. They desire that their privileges shall have clear legal expression. It is not true that college professors desire to graduate unqualified men, or to launch upon the profession a horde of mere pretenders to professional knowledge. Our teachers are no more dishonest than are other dentists. True, they do not all have the same conception of what should be the preliminary requirements. Some of them, unfortunately, were without a liberal preliminary education, and have raised themselves to their present position by force of talent, rather than training. But no one has the right to assume that they are otherwise than sincere and honest in their belief that the standard which many of us think essential to the best interests of dentistry is not demanded. Our teachers, as a whole, are earnestly endeavoring to raise the standard of preliminary qualifications, and the men who are without literary training are steadily being pushed to the wall, and must soon give way to better qualified men. As a whole, they are, notwithstanding the unnecessary sneers of the Secretary of the Committee of Schools, quite as honestly desirous of elevating our educational standard as are the members of the Examining Boards, and they know a great deal better how it can be done.

Another reason why the standard of the Examiners could not be accepted, was because of the arrogant and offensive way in which the movement was conducted. So long as the Examiners were willing to work as the confreres and coadjutors of the Faculties, their assistance was gladly received. But they *demanded* immediate and radical action. They could not see the difficulties which beset the Faculties, and when the movements were not as prompt and decided as they thought they should be, they accused the Faculties of insincerity, and attempted compulsion. Their own body is not composed of men of such high standing as to entitle it to dictate to everyone else. They have no standard of qualification for their own members, and fully one-half of them are not college graduates, and know nothing whatever of the college curriculum. A considerable proportion of those who have degrees, obtained them *sinecurriculo.* The Secretary of the Committee of Schools, who is most persistent in demanding the acceptance of the standard which the Examiners have endeavored to impose, is not a member of any State Board, nor eligible to membership in the National Association of Examiners. The assurance which prompts the attempt to force the colleges into acceptance as a dictator and a governor of one entirely outside all educational organizations, a man who has made himself unnecessarily obnoxious to the schools, is amazing, and is liable to the interpretation that the Examiners are prepared to go any lengths in their exactions, if once their authority is conceded.

Since the refusal of a considerable number of the colleges to accept the terms offered by the Association of Dental Examiners, there has been a denial that any domination was ever intended, or that a resort to compulsory measures was contemplated. But the following extracts from the report of the meeting at which the rules were adopted, would seem to show that it was with positive threats of punishment in case of refusal to conform that they were considered:

Rule 8. To be continued on the list of recognized colleges, all colleges must maintain these rules and conditions.

Rule 9. To more fully enforce these rules it is hereby directed that any college violating these rules shall be taken from the list of recognized colleges.

Dr. Donnelly: How would you enforce this rule?

Dr. G. Carelton Brown (Chairman Committee on Colleges): Simply by sending this resolution to each of the colleges on our list, asking them to subscribe to it, and refusing to put any college on our list who will not subscribe to it.

It is a little humiliating for teachers to be asked to accept a code of rules containing so many grammatical errors and couched in such execrable English as those submitted, especially when they emanate from men who assume pedagogical airs, but to be supposed that the members of the Association comprehended what was meant by the language employed. The above quoted extracts would seem to indicate that the Secretary of the Committee on Schools must have been quite in the dark as to their true meaning, or that he was otherwise confused, when in his answer to the Buffalo communication he says we "must repudiate that we ever said or implied that in case of non-acceptance of our regulations, yours or any other institution would be branded as unrecognized."

There is a dislike on the part of the Faculties to comply with the demands made, because it is not felt that the Examiners Association is at all national in its character. When there are representatives of but a comparatively few of the States in attendance, and when the movement is apparently dominated by those from but two or three, and they by no means the most important, when the men of national reputation and those who are accepted as truly representative are conspicuous by their absence, when such States as New York, Michigan, Illinois and others, pointedly decline to become identified with such a movement, the colleges would simply make an exhibition of their own inanity were they to accept the Board of Examiners as the supreme authority in dentistry.

When a rigid standard of preliminary qualification is adopted, it must be the result of development. The profession must grow up to it. How many of those now in practice could even comply with the requirements of the better schools? Suppose the members of the various Examining Boards were themselves required to pass an examination one-half as rigid as that which they exact of candidates for practice; how many could do this? It is easy to look out questions from some text book, the elementary principles of which the querist himself may not comprehend, but if he were required to pass the college examinations, could he succeed? We venture the statement that not one in ten of the old practitioners could comply with the modern demands; and yet some of them are eminent in their profession. The truth is, dentistry has developed greatly since they entered upon its practice. It is daily developing, but its educational standard cannot be placed too far in advance of its real status without checking instead of fostering that development.

We do not mean to imply that the proposed requirements are greater than they should be. They are far less than is demanded by the State of New York. But the schools must all be brought along together. The whole line must advance. If in action a single company pushes far ahead of the rest, and takes up a position in which it is unsupported by the rest of the army, it will itself be cut off. Hence those who are struggling for the best interests of dentistry are attempting to secure a general forward movement. While they are laboring earnestly in this direction, it is disheartening to see all their efforts made nugatory by the rantings of radicals who, occupying a side position, are unable to view the whole field, and who know nothing of the obstacles in the way. It is not pleasant to be classed as an obstructionist when one knows that he is working in the only direction that can bring ultimate success.

The members of the Faculties Association are as honest as other men. They as earnestly desire the elevation of their profession as do any members of the Examiners Association. They are no more likely to be swayed by selfish considerations than are those who are so determinedly struggling for place and power and domination over their brethern and peers. They welcomed the organization of Examining Boards, and extended to them the helping hand, until at the instigation and under the influence of designing men it was sought to direct their whole power against the schools. The latter have developed faster than has dentistry itself, and even now their standard is in advance of the status of the profession, as is proved by the fact that such numbers of illiterate men are sent up to the schools by practicing dentists, and their acceptance demanded. The colleges will heartily co-operate with the Boards, but only on equal terms. They will not attempt to dictate to the Examiners, nor will their own self respect permit them to submit to insulting exactions.

Let the Examiners Association establish a standard of admission to its own ranks before it sets up one for the colleges. As it now is, one may be a member of the National Association of Dental Examiners who knows absolutely nothing of dentistry. He may be living in violation of every ethical law, and yet his acceptance be urged as an exponent of the highest interests of dentistry. Think of the absurdity of demanding that the graduates of our best colleges shall submit themselves to the examination of a man who never saw the inside of a college! With what propriety can a man examine students under, and pronounce upon the efficiency and correctness of a curriculum of which he knows nothing? He may be an excellent practitioner, and have attained to great eminence in practical matters, without any comprehension of the basal scientific principles upon which a college course is founded. He may be expert as a manipulator, and yet quite ignorant of the theories which are taught in the schools.

Such a man is not qualified to pass upon the college course of study, and it is absurd to demand of the schools that they shall submit to his dictation. We repeat: Let the Examiners establish a standard for themselves before they try to impose one on others. Let them provide that only competent men shall fill their places, and they will command a greater portion of respect than is accorded to them now. Let them refuse to receive unqualified men, who for political reasons are appointed by dirty politicians as the reward for the basest political servitude. Let them see that only clean men, having the proper qualifications, who have received their appointments at clean hands, hold positions as Examiners. Let them relegate to back seats the disturbers of the peace of our Israel, who are endeavoring to advance themselves by appealing to the basest jealousies, and by wanton misconstruction of the actions and words of honorable men. When this is done, and when the Examiners confine themselves to the duties which naturally belong to such Boards, they will not encounter opposition at the hands of any college man in existence. Our profession needs elevation, and anyone who is truly laboring for that end will welcome the assistance of every conscientious dentist.

But the very existence of the schools, their integrity, their efficiency, the welfare of the profession and the good of the public, demand that the attempt of a few ambitious, aggressive men, who have no special qualifications for the task, to assume domination over our dearest and most vital interests and offensively to dictate to those who, to say the least, are equally wise and honest with themselves, shall meet with the most determined resistance.—*Dr. Barrett in Dental Practitioner and Advertiser.*

ARTICLE II.

ECONOMICS OF DENTITION.

BY DR. J. J. MADDEN, '95.

Read before the Alumni Association, December 7th, 1897.

As young practitioners in dentistry, most of us desire to direct our energies in a course that will naturally have a tendency to build up a practice depending upon the training we have received during our college term, and the many expensive lessons tnat are taught us through our own failures. In all these trials, we are naturally weeding out the little egotism that had its birth when we received our diplomas, so that, not having drunk too deeply of the Fountain of Knowledge at our command, we may hear the warning word to keep on. Education never ends.

It is with some timidity tonight, I assure you, that I select this subject, which is no doubt familiar to all of you, and I shall attempt to point out in some parts of the paper some conditions in the course of dentition in which Nature shows her wonderful wisdom, and the economical way she has in bringing certain of these organs into action just where they are needed, and the exquisite and thoughtful manner in which she discards those not intended to serve throughout life.

The economy that Nature displays in her beautiful construction and arrangement of the teeth, is something that has attracted the attention of histologists and embryologist, causing them to neglect the study of other organs and admire the uniqueness of Nature's work in building up the teeth. She sets about her task as early as the sixth week of embryonic life, when the jaws are in the first stages of formation, and the lower jaw made up only of its supporting cartilaginous scaffold. The first sign seen in the development of the teeth would be a sort of a depression extending along the alveolar ridge, and a heaping up of cells on its surface. We now see the formation of the epithelian cord. This is of itself interesting, as the enamel organ is developed from it.

It will, I trust, be unnecessary for me to go into detail as to the changes that occur in the shape of this organ, only to say that as the dentine papilla develops about the fifteenth week, it is seen to push its way upward and change the enamel organ from a bud shape to a cup shaped formation, and in this way the developing tooth gradually takes on its certain form. And while the process is going on here, there is still another going on, namely, the growing up of the follicular wall and the union of its parts, cutting off the forming tooth from the epithelial cord and allowing it to live and grow in a comfortable little house that we know as the Dental Follicle. This process takes place with all the temporary teeth.

The first economical work we see is when, before or about the time Nature has finished her work with the part of the temporary teeth, she makes the epithelial cord pass down and plant the enamel germ of a permanent tooth behind and beneath the temporary tooth, and in this way each temporary tooth has its succeeding tooth beneath it, and in process of development.

Later on, we find the permanent teeth that do not succeed the other teeth are developed in a like manner. The first, or permanent molar receives its germ from the mucous membrane, the second and third molars being supplied in turn from the cord of the preceeding tooth.

The greater part of this work is done during embryonic life, and we must not lose sight of the fact that during this time the jaws are scarcely formed, and the lower jaw developing what we know as Meckels Cartilage; it is just beginning to receive its lime salts, and the bone cells are rapidly building up and around this cartilage, from the symphysis to the angle.

Leaving the developing teeth and jaws, I hurry on through fœtal life until birth, and it is here we find the laws of selection and economy obeyed as the little one comes into the world toothless. And why is this so? For the reason that teeth are not demanded, as Nature has fitted the mother to be the nutritional organism; she has designed to supply her with organs whose lacteal secretion is shown to be the best food for the infant.

I have often thought, why does not Nature begin with the eruption of the teeth at birth? But I find that the digestive tract and glands are not fully organized, and could not tolerate food that would require teeth to masticate it, so once more obeying the law, that which is best for the organism is tolerated.

We may pass on a few months, and when the teeth are required no one knows more about it than the baby, who intuitively attempts to bite its fingers, or to translate its meaning, it wants a rubber ring. It is now about five or six months old, and one day finds its mother happy beyond measure, and the father, after his delight, begins to think of sleepless nights and the dental bills of the future.

We find that the process of the first stage of dentition goes on from about the fifth to the thirtieth month, when all the temporary teeth are in position.

It is during this period that the child sometimes suffers considerably, and I am going to term it a *critical period in life*. I have never met with this term, and justify myself in using it because at this early period the infant is practically made up of a nervous system, the brain being proportionally larger, and the glands in the same condition, so that any deviation from the normal process may cause any condition, from that of fretfulness to those of convulsions or paroxysms, and this we can appreciate when we think of the teeth with open foramens, so that any restriction, such as the alveolus or dense gum tissue, will cause pressure on the sensitive and vascular underlying pulps.

Nature shows good judgment again, in that these teeth are not of dense structure, nor so delicately constructed as the permanent teeth; but suffice it to say, they are sufficient for the work.

While the temporary teeth are in service, Nature begins to introduce teeth that shall serve us during life, and now in the eruption of the first permanent teeth she again shows her wonderful workings in this way, that she demands none of the temporary teeth, but places at the ends of the temporary series the first permanent, or sixth year molars. In this result I believe I can see a threefold cause: First, that the jaws may be properly supported while she is at work in the anterior part of the mouth; second, that the young subject may have a better grinding surface while she is replacing other teeth; third, that it may be a strong barrier in keeping the posterior developing teeth in position. The last view seems to be supported by the fact that the first molars are the largest of the series.

We find now, through a physiological process of a somewhat obscure nature, that certain cells have been working assiduously in tearing down and carrying away the roots of the temporary teeth, and in this process we recognize the fact that it is not of a mechanical nature, due to pressure of the permanent teeth.

The cells doing this work may be called osteoclasts, cementoclasts, odontoclasts, with the presence of a certain enlarged papilla near the root of the temporary tooth.

The essential factor in this process will be a healthy temporary tooth, the presence of the cells referred to, and the papilla-like formation at the end of the root.

The jaws have all the time been expanding in all directions, so that when the permanent central incisor is ready to erupt it has sufficient space made, of course in a great measure depending upon the space left by the temporary tooth. The next teeth to be replaced are lateral incisors, and then the temporary molars, these substituted by permanent bicuspids. Now again we find that Nature has waited so that she may drive a wedge that shall form a keystone and supporting pillar to the arch, and she uses the root to form a prominence bearing the same name, which gives contour to the face, and is an important factor in expression.

The last molars or wisdom teeth are interesting to study, for we see here they have become almost rudimentary organs, and in many mouths this condition really exists, while in others the teeth fail to erupt.

This is due in a great part to the fact that the jaws will hardly accommodate them, as it is a retrograde process, not only in the jaws but also in the teeth.

You will observe that I have not attempted to give you any tables, nor do I want it felt that the subject was selected because we are unfamiliar with it. I trust it will be a factor in making all of us observers, that we may be enabled to get the most out of the subject that is before us.—*Dental Practitioner and Advertiser*.

ARTICLE III.

EXTRACTING TEETH.

BY DR. F. C. M'PHERSON, '97.

Read before the Alumni Association, December, 7th, 1897.

The operation of extracting decayed and painful teeth has been performed, in some manner, from very remote antiquity. At first it was with very unsuitable instruments, and in the roughest and most barbarous manner. In times past, and not even very remote, extracting teeth, bleeding, cupping, leeching, and indeed most other surgical operations, were consigned to the care of barbers, as not worthy the attention of learned physicians.

As this operation is more frequently performed than any or all other surgical operations combined, and as it is usually accompanied with more dread than any other operation of equal importance, and when unskillfully performed is a very painful one, sometimes even a dangerous one; it is therefore important that it should always be done in the most careful and skillful manner. Proper instruments should be selected, and used with the least exertion and force by the operator, and with the least possible injury to the surrounding parts.

The teeth of all the higher orders of animals are held in place by that form of attachment called gomphosis, which consists in insertion of the roots into sockets in the jaw. The roots are invested and the sockets lined with a dense, firm membrane, the pericementum. Strong fibers of this membrane penetrate the tooth cementum on one side, and the bone on the other, and it is necessary to tear these fibers loose from either one or the other, before the tooth can be extracted.

Sometimes the attachments are the strongest to the tooth, and in that case the pericementum will be brought out on extraction, attached to the tooth. Usually, the membrane is more closely attached to the walls of the boney sockets, and the fibers are torn out of the tooth, leaving the pericementum in the socket. The tooth is also sometimes retained by its shape, or by curves, or by enlargement of the root, and so firm is its attachment to the jaw in many instances, that it is only with extreme difficulty that it can be dislodged.

A few of these facts, perhaps, will remind us how important it is to consider all cases well before operating. It is a fact that many teeth are extracted that might and should be saved. Sometimes this is the fault of the dentist, and sometimes the patient insists upon the removal of teeth which should not be lost. It is the dentist's duty to instruct the patient in this respect, and to refuse to take out teeth which would better be left in. When necessary to extract, study the case well, find out the condition of the tooth to be extracted, and that of the surrounding parts. Study the form of the alveolar process around the tooth to be extracted, as it varies in thickness and shape according to the size of the tooth, and its arrangement in the arch. It is especially necessary to be familiar with the condition of the lower jaw at the second lower molar. The rising of the external oblique ridge for the formation of the anterior border of the coronoid process, causes a thickening of the buccal bony covering of the root, while at the third molar this ridge rises to a level with the border of the alveolar process, making the bony covering on the buccal side of the root about one-fourth of an inch thick.

This is of importance with reference to the extraction of the roots of this tooth, which in many cases is the most difficult to remove. In fact the second and third molars of the lower jaw are fixed in alveoli, hollowed out in the lingual side of the body of the bone, rather than in a process or ridge on the bone, as with teeth anterior. Caution should be used in every case when extracting to avoid unnecessary destruction of the alveolar process. Especial care should be used with the peridental membrane in extracting for old people. As age advances the peridental membrane becomes thinner, and the movements of the teeth are more restricted. In some cases the roots adhere to the alveolar process. It is well as a precation when extracting, to compress the gum around the roots of the tooth to be extracted with the thumb and index finger of the left hand, which will enable the operator to tell when the roots are loose from the process. Then giving the forceps a rotary motion before pulling, will materially lessen the danger of part of the process coming with the tooth. The greatest difficulty in extracting is usually found in the case of impacted teeth which lie horizontally instead of vertically in the jaw. This most frequently happens with the wisdom, or third molar teeth. They often develop just at the border of the ramus, so that there is not sufficient room for them. Sometimes they cause so much imflammation that the muscles become affected, and it is impossible to get the mouth sufficiently open for extraction. In these cases the first thing is to control this until the tooth can be reached. It may be necessary to give an anæthetic, and chip away the process until it can be taken out. Usually the Physic forcep will be a great help in these cases, if the second molar is in position. The blades are placed between the teeth, and the second molar being used as a fulcrum, the wisdom tooth is pried up and tipped over backward.

Teeth should be extracted with moderation in all cases. It is much easier and more effectual to accomplish this if the operator will use his body as a fulcrum, his arm being the lever, thereby lifting the tooth out slowly, thus avoiding the danger of injuring the surrounding parts, as well as the possible crushing of the tooth, which is often the case when the swinging arm motion is used. This has to be done more quickly in order to get the required power.

There are many methods employed to make extracting painless. The local application, hypodermically, of cocaine in some form is quite general, with very good success, providing it is properly applied.

From four to six injections in the gum around the neck of the tooth to be extracted are generally sufficient to get complete anæsthesia. The free margin of the gum should then be lanced, and if there is still a little sensation, insert a little more of the anæsthetic and then extract. If properly executed, 90 per cent. of all teeth can be extracted with satisfaction to the patient.

A local anæsthetic should never be employed unless one knows what it contains. No one can use any remedy safely unless he knows what it is. He cannot tell how much it will be safe to give. He must adapt his dose to the physical condition of the patient. There is no danger of the gums sloughing if the proper anæsthetic is employed. All instruments should be kept well sterilized, and the mouth should be sprayed with some good antiseptic after the operation.

But even with the greatest care accidents will sometimes happen, such as the breaking of a tooth, or of the process. When this occurs, the dentist should remember that the first thing is to stop any great flow of blood, and to compress the parts together.

Above all things he must not get excited or lose command of his faculties, remembering that unless there is a very grave injury there is little danger of life.—*The Dental Practitioner and Advertiser.*

ARTICLE IV.

FORMAGEN.

BY DR. ABRAHAM KONITZ.

Reported by George Randorf, Berlin, Germany.

Formaldehyde is derived from methylic alcohol, out of which it is obtained as a colorless, odorous gas through incomplete oxidation. Through the researches of myself, Dr. Lepkowski., Krau and others, it is known that formaldehyde has such an effect on an inflamed pulp that the affected tooth can be filled at one sitting. It is used as an aqueous solution of forty per cent. A piece of cotton saturated with this solution, is applied to the inflamed pulp. By this treatment the desired effect is obtained, but the method is faulty in that the formaldehyde solution causes in the pulp, as well as mucous membrane, very severe pain for several hours. Dr. Lepkowski recommends this method only in cases where lack of time demands it.

Hence the question arose, how to obtain the desired result without pain. Many experiments followed, and Lepkowski assures us that weakening and mixing with cocaine is ineffective. After a series of experiments, I found that the required result could be obtained with pure liquefied carbolic acid, which has the property of uniting clear with the formalin in every form.

After long experiments, which I ended in the spring 1885, and which brought no satisfactory result, I tried and made use of formaldehyde in the treatment of roots. I prepared a very spongy cement, such as is commonly used for the capping of inflamed pulps. After many trials, I found a cement especially fit for the purpose, which contains marble and eugenol. In both fluid and powder, the freshly produced formaldehyde is introduced while the two are kept separate. By mixing this fluid and powder on a glass slab, the putty like paste called Formagen is obtained. This is applied to the exposed pulp or, if it is still covered, over the softened dentine. The most violent pulpitis ceases in a few minutes, and the parts harden in about five minutes, so that the tooth can be filled with cement or amalgam.

In the course of somewhat over nine months, there have occurred more than a thousand cases of such teeth which have been successfully treated with Formagen, so that they were filled permanently at one sitting. It is asked if the teeth so treated have been preserved with pulps dead or alive. This question is answered by the fact that the pulp after four or six weeks treatment with Formagen fully recovers and thenceforward performs its normal functions. In teeth which have been treated with Formagen, the fillings as well as the layers of Formagen have been removed, and in every case the exposed pulp has responded with normal sensitiveness.

It is daily asked in what manner the Formagen acts upon the teeth. To this question there cannot yet be any definite answer; but the theory so far as it has been determined is as follows: the pulps covered with Formagen are influenced first by the eugenol, and also by the carbolic acid contained in the fluid, which thus deadens the pain. And during the action of the eugenol, the formaldehyde passes gradually out of the Formagen and penetrates into the pulp, and changes the same in a small region around the exposed place. The developing gases and fluid from the pulp chamber are absorbed by the porous putty. And from the effect of the formaldehyde the pulp becomes hard and tough. The parts of the pulp not affected, meanwhile act normally; and from this fact, and from the action of the formaldehyde upon the pulp, it becomes, for the first days after application of Formagen, inactive, but in a few weeks is restored to its normal functions.—*Items of Interest.*

ARTICLE V.

DRAINAGE AND IRRIGATION OF THE ANTRUM.

BY E. L. TOWNSEND, D. D. S., LOS ANGELES, CAL.

Read before Pacific Coast Dental Congress, July 13, 1897.

Drainage, as applied to the antrum, means the opening and insertion of a tube into the antrum, allowing the contents to drain into the mouth, a practice that fails to accomplish the result desired; for, if the tube is short enough to allow the secretions to drain through the tube, granulations form about the end of the canal, producing more or less soreness and eventually closing the end of the opening. If the tube is long enough to prevent granulations forming over the end, it then prevents the very object it is intended to accomplish. Permanently fastening the tube to adjacent teeth is open to the objection that pus will seep between the tube and canal, thus becoming a source of irritation and infection, and establish a place that it is impossible to properly cleanse. And even if the drainage tube accomplished all that it is intended to do, it yet remains an undesirable method of treating these cases, on account of the disagreeableness of a constant dripping of pus into the oral cavity. A cleaner and more comfortable method is the complete plugging of the canal —the removal of the plug and a thorough irrigation of the antrum.

In making the opening into the antrum, a hole of sufficient size should be made to accommodate a plug made from No. 5 wire, standard gauge, having plugs and syringe nozzles drawn to the same gauge. In opening the antrum the hole should be made as direct as possible, and usually at a point occupied by the first molar. After the hole has been made, the plug is inserted, an impression taken and the plate made, which may carry the teeth or not, as circumstances dictate. During the interval between the taking of impression and insertion of the finished plate, a temporary plug should be worn, so that the hole shall not contract. This appliance soon becomes comfortable and is worn with no greater inconvenience than the ordinary denture, effectually preventing the contents of the antrum reaching the mouth, and upon its removal affording an opportunity for thoroughly cleansing the parts.

An ordinary fountain syringe, holding a quart or more, with a point bent to a right angle, is the most effective apparatus for irrigating the antrum. The syringe nozzle should be inserted into the opening, and the patient's head lowered to a point that will prevent any of the fluid running into the throat. A quart or more of slightly saline or alkaline solution is run through the antrum and out of the nose, thus completely washing the cavity and nasal passage. I have found it useless to try to cleanse the cavity by a spray or small amount of water. What it needs is a flood, something that will loosen the adherent, purulent mucous secretion and carry it away. The patient can attend to this, and irrigate as often as the conditions require, which ordinarily is from two to six times a day. It will be noticed that this treatment does not contemplate a speedy cure, but the preparations are made for a permanent opening and a lengthy treatment of the disease. In fact, I consider that the benefits arising from the opportunity to effectively cleanse the parts about the opening of the antrum into the nose compensate for the inconvenience and trouble. As most of the cases arise from a catarrhal condition, this gives an opportunity for treatment not offered by any other method, and so far as it has come under my observation it has been effective and has produced what is ordinarily termed a cure.—*Pacific Stomatological Gazette*, Sept., 1897.

ARTICLE VI.

TUMORS RESULTING FROM SEPTIC PULP OF TEETH.

BY G. LENOX CURTIS, M. D., NEW YORK.

The object of this paper is to illustrate several of the most prevalent tumors of the jaw, evolved by septic material discharged from the decomposing pulp of the teeth. It is my intention to speak of them from a practical standpoint, and the desire is to inform those interested how to treat and prevent their recurrence.

Experience leads me to believe that the origin of fully ninety per cent. of all tumors of the jaw, face and neck can be traced to diseases of the teeth, and in many cases to the septic pulp. The most common of these tumors is the alveolar abscess, the contents varying from mere gas to to thick pus. The treatment has been described so often that I shall not here repeat it, further than to say—remove the cause and prevent recurrence. This can be done by cleansing the pulp-canal, filling it perfectly, dissecting away the sac, roughening the surface of the bone sufficiently, and promoting healthy granulation to fill the cavity. Another treatment is by extracting the tooth; this course, which is so often considered sufficient, does not always effect a cure. Whenever a decomposed pulp exists a cavity in the jaw will be found, at or near the apex of the root. The exception, I believe, is only when the peridental membrane has not been inflated so as to produce an abscess sac, but has immediately succumbed to the septic influence of the pulp, the gas passing through the canals of the bone to some remote part, and there forming the tumors. This may be so gradual that the attention of the patient has not been called to it, except by the soreness and swelling that might result from the primary attack, and is recalled by the patient only when questioned about it. These cysts may be simple or multiple, and I have seen as many as three in one-half of the upper jaw.

Whenever the pulp of a tooth is found to be devitalized, and is not removed and filled as suggested, you can depend upon its causing trouble; then no time should be lost in preventing infiltration or increase of the area of the disease. At this writing I have under treatment three cysts of extensive proportions, which are traceable directly to this cause. In the first case the swelling appeared in the nose, plugging the left nares, along with a perceptible enlargement between the internal canthus of the eye and the wing of the nose. Searching for the cause, I found the pulp in the first bicuspid dead and putrescent. This tooth was extracted by the patient's dentist, who claimed he did not find it abscessed, and the tooth, being of good quality, was cleansed, filled and replanted. The swelling somewhat diminished, but recurred in two years much increased in size. Examination of the alveolar process showed a normal condition. An opening was made into the tumor under the lip, in line with the wing of the nose, from which exuded a half ounce of thick greenish mucilaginous fluid. The sac had gradually increased until the substance of the superior maxillary bone had been destroyed from the point where I entered the sac to the nasal process, leaving only the periosteum intact. Even the inferior turbinated bone was destroyed. The walls of the nares offering the least resistance, the tumor gradually followed that direction until the left nares were completely plugged. The sac was curetted and the cavity treated and healed, care being observed to force back the periosteum so that the normal opening of the nares was restored.

The next case was where the pulp in the left central incisor had for many years been dead, presumably from a blow, as there was a slight fracture on the cutting edge. The pulp was opened into from the palatal surface of the tooth, and fully two drachms of pus flowed therefrom.

The pulp-canal was then cleansed and permanently filled, an incision made through the gums and periosteum from the labial surface, exposing the end of the root of the affected tooth. A deluge of thick, yellowish fluid flowed into the mouth—in all two ounces. It was found that all the bone extending from the right lateral to the left first bicuspid to the anterior boundary of the antrum and the nasal process was completely absorbed, leaving only the periosteum intact. There was also considerable bulging of the left nares and the roof of the mouth. This almost plugged the left nares; in fact, the floor of the nose was considerably elevated and the bone under it was completely destroyed. Fully two-thirds of the roots of the central incisors, left lateral cuspid and first bicuspid teeth penetrated this cavity. The patient never realized any trouble from this tumor, except occasionally for several years a little tenderness on pressure at the side of the nose, until about one month since, when the face suddenly swelled and was diagnosed by his dentist as the result of an alveolar abscess attached to the root in question. When the sac of the tumor was dissected away, it was found that immediately surrounding the affected tooth there was an independent sac, which was similar to that found in alveolar abscess and which contained the pus referred to.

The third, which was still more extensive, involved all the alveolar process of the left superior maxillary, from the third molar to the lateral incisor and extending to the molar. The face was considerably deformed by an enlargement below the molar about the size of a small hen's egg, which was apparently as firm as bone. Nearly the entire antrum was found occupied by this tumor, the contents being almost a jelly, of a slightly yellowish color, in quantity about three ounces. The etiology of the tumor I believe to be traceable to the back roots of the second molar, which had many years remained in position and were found penetrating the cyst.

These tumors are, fortunately, not numerous, and would be much less so if dead teeth were properly treated or promptly extracted. I could cite many cases of adenitis and inflammation of the ducts, also the bursa of the floor of the mouth, of osteoma and similar ailments, traceable to septic diseases of the pulp of the teeth, but I feel that it is not necessary to here dwell, or to impress you further on the importance of prompt and thorough removal of any such influence in the mouth.

In February, 1888, I operated on a case which illustrates clearly the lack of judgement of the dentist who filled a cavity over a septic pulp. The patient had the inferior left first molar filled with amalgam, from which the pulp had not been removed. The day following this filling the jaw around the tooth became sore and the face swollen. This condition continued to increase for several days. For two or more weeks she suffered much pain, when the swelling gradually diminished, leaving an indurated tumor near the apex of the roots, which continued to increase in firmness and constantly distressed the patient. At times the pain was quite severe. From the first of the trouble the patient was advised by the dentist to have nothing done with the tooth, as it was not at fault, while the physician and others advised its extraction. Two years later the patient consulted another dentist, who extracted the tooth, and found it in the condition as heretofore stated. This, however, did not check the growth of the tumor, which gradually increased in size until the face was considerably deformed. I was able to enucleate the tumor, and from its size could readily understand that the jaw-bone was nearly severed, there being not more than a quarter of an inch of the inferior border remaining, so completely had the growth of the tumor destroyed it. The tumor was osseous. The operation was done from within the mouth, thus avoiding the usual scarring, so disfiguring when the opening is made through the face. The case had been diagnosed a "sarcoma" and removal of half of the lower jaw was advised.—*Dominion Dental Journal.*

ARTICLE VII.

TREATMENT AND FILLING OF ROOT-CANALS.

BY H. H. SULLIVAN, D. D. S., KANSAS CITY, MO.

Read before the Missouri State Dental Association, at Pertle Springs, July 6-9, 1897.

The subject that I have chosen is one which graces the pages of all our meetings, but you will soon discover that this is written solely from my own mode of procedure in the cases cited, and not taken from any text book. It will greatly assist me if you will watch the cases, as they are all numbered 1, 2, 3, etc., and it will save repeating much. I believe there is nothing in operative dentistry that has given the average practitioner so much worry and thought as his inability to treat and fill root-canals. The main cause does not lie in the want of literature, for you cannot pick up a dental journal to-day without finding from one to five articles or practical points on the treatment or filling of pulpless teeth; the text-books are also full, yet there is a woeful lack of knowledge upon this subject, and why? Because we have not yet awakened to the importance of saving the organs of mastication. The average dental student does not learn the mechanical application of medicines and fillings of this kind, because he thinks it of too little importance, he would rather put his time on Anatomy, Chemistry, Physiology, Materia Medica or Therapeutics, and possibly Orthodontia; and he reasons that when he has a city practice, in six months after graduation, his patients will be of the refined order that visit him every six months and send their children oftener, and he expects to be thus relieved of the ordeal of treating exposed pulps, abscessed teeth, pericementitis and a score of similar disturbances. But when he does enter the realm of an office life, and finds to his sorrow that four of five patients who come to him have one or more teeth needing treatment, his heart sinks and he calls in review the professors who lectured on that worn out subject—"treatment and filling of root-canals."

I will now cite the first case as it presents itself to one of our new graduates: A lad of 15 years presents himself with an aching lower first molar, which has kept him awake two or three nights. The doctor carefully examines the case and finds a simple exposure, and the pulp in a state of acute inflammation; but owing to the abundant supply of saliva he cannot secure dryness long enough to make an application of medicine to quiet the pain, so he adjusts the rubber dam, dries the cavity and places in it a pledget of cotton saturated with chloroform. This partially relieves the pain, and he then punctures the pulp with a fine broach and again applies the chloroform, which this time stops the pain. The following, to reduce inflammation, is now applied to cavity on cotton. Tannic acid, cocain crystals, oil cassia; and sealed in with a pledget of cotton dipped in chloro-percha. The next morning the following is used: Tannic acid, cocain crystals, oil cassia, arsenious acid, small drop. Seal as before or use cement. Never apply a devitalizing agent later than 3 p. m., and not then unless you have first reduced the inflammation, or severe pain will keep your patient awake. Do not use sandarac varnish to stop a cavity in which you have an exposed pulp, as the alcohol will nearly always increase the pain.

Case No. 2. Acute abscess of first molar. Paint gums, using camel's hair pencil, with tr. aconite, tr. iodin, aa ʒ i, chloroform, ʒ ss. Then gently remove all decay and foreign matter from cavity with excavators, wash with tepid water from a syringe, open all of chamber; take a small broach and enter canal, removing and cleaning until you have reached the apex; then with a smooth broach, dipped in sandarac varnish and wound with a few threads of cotton dipped in peroxid of hydrogen, cleanse the canal by a pumping process, being very careful that the cotton is not tight enough in the canal to force any medicine or debris through the foramen into the apical space. If buccal canals are so small that you cannot enter them, place a pledget of cotton dipped in a 50 per cent. solution of sulfuric acid over them for a few hours, and then with a fine broach gradually enter and drag out the softened substance until you find your way to the foramen. Finally, dip small threads of cotton twisted to form the shape of a pulp in oil of cassia and iodoform, and insert with smooth broach to the end of canal; place a tight pellet of dry cotton in cavity of tooth, paint gums again and dismiss patient for 24 hours. Then repeat treatment and seal cavity with cotton dipped in chloro-percha, and if it remains quiet 24 hours you may proceed to fill canals, capping the canal filling with cement You will find few cases in which 24 hours will not be time enough.

Case No. 3. Chronic abscess. Remove contents of cavity and canals in a manner indicated in case No. 2, following with peroxide of hydrogen; when this ceases to effervesce, use a 50 per cent. solution of sulfuric acid and dilute with a saturated solution of bicarbonate of sodium. Treatment. Fill canals with cotton saturated with oil cassia and iodoform, as in a case of acute abscess; allow this to remain in the tooth four days, protected by cotton saturated with sandarac varnish; in the center of stopping, while you are inserting the same, hold an instrument used for filling root-canals, which extends through the stopping, and with water syringe dampen stopping; then remove canal plugger, leaving a small opening for a vent, through which the gas can easily escape, and treat until no odor is perceptible.

Case No. 4. Where absorption of root has taken place, leaving sharp spiculæ at apex, which continually irritates the pericemental membrane. No fistula. First make a fistula by the use of a serrated plugger point, dipping the instrument in 95 per cent. carbolic acid; dry gum over apex and touch instrument to point where fistula is desired; the acid will form an eschar, which you can remove with the serrations of plugger point; dip the instrument again in the acid and repeat application; by this means you will soon, without pain, reach the cavity at apex of root, which was formed by the abscess which caused absorption of tooth. Now enter fistula with a large round bur and cut away any ragged edges of process and tooth that you can reach with this instrument, in fact make cavity quite smooth; when you have accomplished this, wash out cavity with boiled water two parts and some antiseptic mouth-wash one part; then with a pair of approximal trimmers file and polish end of root. Treat canal the same as in chronic abscess.

Case No. 5. Anterior teeth with fistulous opening. Remove contents and cleanse as described in case No. 2; force a little peroxid of hydrogen through fistula; cleanse this out by the use of cotton on broach until canal is almost dry; use a 50 per cent. solution of sulfuric acid as described; dry again; saturate a loose pellet of cotton with oil cassia and place in pulp-chamber, and with a hot air syringe, or ordinary chip-blower heated from the alcohol lamp, drive the oil into the tubuli until none remains on the cotton, which is indicated by the cotton turning brown. Direct patient to exhale while you force the air from syringe into canal, and thus avoid irritating your patient's throat, should you not have the rubber dam adjusted, and making him cough, which will cause delay and possibly dampen the canal; remove cotton, force a couple of blasts of hot air into the open canal, which will drive out all surplus oil and dry the canal; now with cotton twisted on broach and dipped in chloroform cleanse pulp-chamber of excessive oil, dry once more, and fill canal immediately, forcing filling through fistula.

Case No. 6. Extirpation of pulp and root filling accomplished at one sitting. I cannot perform this operation except upon a chosen few; they are of a peculiar type, and their general build indicates their nature, one which will endure any amount of punishment with but little retaliation. The operation is performed in the following manner: Adjust rubber dam; dry cavity, and with sharp excavating burs and excavators clean cavity of all debris; apply chloroform for a minute or two, and while this is in place prepare a pledget of cotton with a saturated solution of hydrochl. cocain crystals dissolved in oil of cassia; remove cotton from cavity and apply the pellet last prepared. Now with hot air from the chip-blower drive the cocain into the pulp, and when all the fluid is thus forced out of the cotton, remove, and with a sharp bur revolving at a high rate of speed open the pulp-chamber to its greatest diameter; if pulp is sensitive, repeat cocain; then take a small broach and insert it at the side of pulp close to the canal, and push it gently but firmly to the apex with a straightforward movement; rotate the broach from left to right until you feel that you have a good grip on the pulp; then with the same rotary motion and a pull, you will remove all the remaining portion of pulp, with but little if any pain. Hemorrhage will follow this, which is easily checked by cotton wrapped on a broach and dipped in chloroform and applied to canal down to apex, which will coagulate the ruptured blood-vessels. Now dry canal and fill immediately; you can follow this treatment with any mode of crown-filling you choose at the same sitting, without pericementitis following.

Filling root-canals without a fistulous opening. Have cavity and canal face from all foreign substance, thoroughly dry and aseptic. Taking up the root filling from each case as I left it in our narrative of treatments, I would proceed to fill the canal by dipping one of these fine canal pluggers in thin chloro-percha and inserting it at the side of canal, and slowly push this up to the apex, keeping it on the same side of canal all the way, thus allowing the air to escape from the canal. When the apex is reached, rotate the plugger until the end of canal is sealed, and proceed with the same operation until you have canal two-thirds full of chloro-percha. Now take a gutta-percha point, and clip the sharp end off until you have rather a stiff point, and grasping the cone at larger end with a pair of college pliers, force it into the canal as far as possible, having the cone cold so it will not bend easily. If this does not fill the canal, insert another and another until the canal is full. Then with a hot instrument cut off all the gutta-percha and chloro-percha that has pushed out into the cavity of tooth, and with chip-blower warm the canal filling, and with larger pluggers force the filling up as far as you deem necessary to form a perfect obliteration of all space in the canal; the chloro-percha will assist very materially in sealing all little spaces. Now cap this root-canal filling with a good cement, and you have a good foundation upon which to build a filling.

Filling canals with a fistulous opening on the gum. Taking up the work where we left the treatment, you proceed as directed in above filling of canal to the point where we stop at two-thirds the way up the canal with chloro-percha; fill canal full of chloro-percha, and with a pumping motion force it through the foramen. Fill apical space and continue to force the same by adding more chloro-percha until it is forced out at the fistula. Now fill canal with gutta-percha points as directed. When this is accomplished fill a syringe with tepid water and some antiseptic mouthwash, insert the muzzle in fistula and force the contents of syringe into the cavity in process, which will cause all the surplus filling to be forced out at the side of syringe.

I do not believe in the use of copper, wood, lead, silver or gold wire points, nor do I believe Salol by itself will ever make a good root-canal filling. I do believe that a good practice would be to line the canal a few days after you had sealed the apex, and am sure no trouble would arise with damson resin and paraffin, equal parts. This would seal the tubuli and keep moisture from entering, and if such should occur, would avoid disintegration of a gutta-percha root-canal filling. Discoloration never occurs if root-canal be properly filled before the tooth begins to discolor.—*Dental Digest.*

ARTICLE VIII.

QUEER THINGS ABOUT MANKIND.

Few people are aware of the wonderful engineering skill and ingenuity with which their bodies are constructed. If patents were taken out for all the clever contrivances to be found there, it would probably keep the staff of the Patent Office going for three months.

Who would think that in his eye there is a block and pulley, or "tackle" as the sailor calls it, as complete and efficient as that with which a ship hoists her mainsail? There it is, however, and whenever you look at the tip of your nose the muscle that moves your eyeball works in it. There are several of these pulleys in the body.

Another clever dodge in Nature is shown in ths bones of the face. Accomplished engineer that she is, she always uses the smallest quantity of material sufficient for strength. In making the bones of the face she wanted a large surface to which to attach the muscles; but as she didn't wish to encumber us with heads as heavy as an elephant's, she burrowed hundreds of little holes in the bones, called air-cells, and thus secured strength, large surface and lightness. In the same way she made the long bones of the legs and arms hollow in the middle. What a saving this is may be understood from the fact that a hollow shaft of bone or iron—or any other substance—is about twice as strong as a solid shaft containing the same quantity of material.

When you get a severe cold you are apprised of the presence of another conning device—the Eustachian tube. This tube is two inches long and passes from the inside of the ear to the back of the mouth. It was put there to keep the air at the same pressure inside the drum as outside. Otherwise there would be no vibration of the drum and you would be almost stone deaf. When you get a bad cold this tube sometimes becomes inflamed and blocked, and you are made quite deaf.

Adam's apple, if it was that fruit which brought into the world all our woe, is now a useful organ. It serves as a sort of storage cistern of the blood for the supply of the brain. When the heart sends up too much blood Adam's apple intercepts it, or part of it; and when the direct supply from the heart temporarily runs short Adam's apple gives up its store.

The liver is a most wonderful organ, containing facilities of several kinds. But perhaps the most wonderful thing in it is that part set aside to look for and arrest poisons.

All the food that you eat, except the fat, has to pass through the liver before going to the heart and body generally; and in the liver there appears to be stationed something in the nature of custom officers, who examine every bit of food and remove from it all substances dangerous to the body. But they are capable of dealing only with the small quantities in ordinary food and when you eat poisonous mushrooms or mussels they are quite overpowered.

Another protection from danger is afforded you by the supply of a small quantity of hydrochloric acid to the stomach. There are little machines in the stomach especially designed for the manufacture of this acid from the salt you eat, and they are so regulated that they produce a quantity equal to one-fifth of one per cent of the contents of the stomach. Experiment shows that this is exactly the percentage required to destroy the thousands of microbes that we swallow in our food. But for this thoughtful provision of Nature we would probably get a new disease with every meal.

Most people know the use of the epiglottis, which saves us from imminent death every time we swallow a bit of food. At the back of the mouth the air-passage and food-passage cross each other, and whenever we swallow food it would inevitably go into the wind-pipe and choke us; only that this little body pops down and covers the entrance. It is like the policeman who regulates the traffic where streets cross.

The semicircular canals, for centuries a physiological puzzle, are an extraordinary device for enabling us to keep our balance. They are like channels, hollowed out, in connection with the ear, in the bones of the head, and partly filled with fluid lymph. As our head or body sways the head moves, acting like a spirit-level, and informing the brain whether we are standing on the perpendicular or at a dangerous angle.

One of the most valuable of all inventions made for our comfort and safety is the perspirative gland. It acts like the safety valve of a boiler, letting off heat when we are becoming dangerously warm. If our temperature rose seven or eight degrees we should not have twenty-four hours to live. The value of the sweat-gland is therefore obvious. In fact, without it a football or cricket or rowing match would be out of the question, and we could not safely walk at a speed of more than a quarter of a mile an hour. Nature has taken good care, however, that we should not run short of these useful organs and has given us no less than 2,500,000 of them.

So inventive was Nature when constructing our body that the difficulty is to stop enumerating her clever ideas. She saw that we would very soon grow tired if we had to be held up by two legs by means of muscular effort, so she made the hip-joint air-tight, and the pressure of the air alone keeps the leg in its place. At the same time, although she has not discovered ball-bearings, she made the ball of the leg bone and the socket of the hip so smooth and oiled the joint so well that the friction is practically nothing.

When the spinal canal in the backbone was made, great pains had to be taken, for, while it consists of many pieces and is freely movable, it contains the precious cord, one nip of which would be fatal. The measurements are so accurate that there is no danger of such an event. Whenever there is much and free motion, as in the neck, the canal is large and open and nip is impossible.

Again, the heart and lungs are, of course, the very basis of our life. They are in constant motion, and if allowed to rub against the cheft walls around them, they would either get inflamed or wear away by friction. Nature has, therefore, surrounded them with a double sac, and between the outer and inner layers of it she has placed a quantity of lubricating fluid.

But the most remarkable of all devices is that for splicing broken bones. The moment a bone is broken a surgical genius is at once dispatched from the brain to the spot. He proceeds to surround the broken ends with a ferule of cartilage. This is large and strong, and takes quite a month to complete. When the two ends are held firmly and immovably in place by the ferule, this mysterious surgeon begins to place a layer of bone between them and solder them together. And when the layer is complete and the bone securely welded he removes the ferule or callus, just as the scaffolding is removed from a finished building. Often a bone does not get broken for two or three generations, and yet this power to form the callus and knowledge of how to do it is never lost.—*Scientific American.*

ARTICLE IX.

PROMINENT CAUSES OF FAILURE IN THE USE OF ELECTRICITY IN DENTISTRY.

BY C. S. NEISWANGEY, M. D., CHICAGO.

Read before Southern Dental Association, Old Point Comfort, August, 1897.

Electricity is a natural phenomenon, and the only way to accomplish results, either physical or therapeutical, is to observe closely and try to interpret the language in which nature speaks to us. Electricity is closely related with some other forces with which we think we are familiar. It is but a mode of motion or under manifestation of a form of matter called the ether, which permeates all bodies and pervades all known space.

Light is only a transverse vibration of this same ether, with infinitesimally short wave lengths. Heat and sound are made apparent to us by the aid of longer waves of the same medium. Electricity is governed by laws which are as well known as those which regulate light, heat, sound and gravitation, all elucidated by mathematical process. All animal and vegetable life being due to and dependent upon the electrical conditions surrounding it, is it not reasonable to suppose we should be able to restore the equilibrium (health) of the body by supplying electricity from an outside source?

To comprehend the subject of electricity there are three fundamental principles which must be observed: First. *Voltage.* This is not electrity itself but the force which impels it—push-power—produced by a difference of electric level. Second. This voltage or difference of electric level is caused (if we are doing cataphoric work with a battery of cells) by the difference of potential between the two elements within the cells. If two pieces of metal are immersed in an acid or other existing fluid, one of which is acted upon by the acid much more readily than the other, the voltage will be in proportion to the difference with which two metals are acted upon by the fluid. Two metals having a great difference of potential will give a high voltage or push-power. Third. Amperage is electricity or current; it must not be confounded with voltage. We may represent this by a rain; the water represents the amperage, the swiftness with which it flows the voltage; hence as we may have a broad river flowing slowly, or a narrow stream running swiftly, so we may have high amperage and low voltage, or vice versa.

There are three factors in the causes of failure in this class of work: (1) The battery. (2) The controlling device. (3) The manipulation of the electrodes.

(1) The galvanic current—the direct or continuous current generally utilized in dentistry—is produced by chemical decomposition; the conversion of chemical energy into electric energy. If we would generate electric energy sufficient for our purpose, we must have a corresponding consumption of the fuel that keeps up the chemical decomposition, and this fuel must be renewed as required. Hence the failures of those who are seduced by the attractive advertisements of those who furnish a battery of a few cells as large as a man's finger guaranteed to do heavy work for years. In dentistry we have a heavy resistance to the passage of the current to overcome, and as it is the current or amperage that does the work, we must have sufficient voltage or push-power in our battery to overcome this resistance.

(2) The controlling device should be capable of controlling the current in absolutely gradual gradations, and not by steps, or cell by cell, as this would cause very great pain in a hypersensitive cavity. An instrument in which the resistance is composed of german silver will, for instance, be objectionable, because the passage of electricity generates heat, and when the wire is heated resistance is

increased and the current drops back and has to be re-established by a forward movement of the instrument. This is a very prominent cause of failure not heretofore recognized. With the wire rheostat there is a constant fluctuation of the current backwards and forwards.

The term "volt selector" means nothing. A volt selector is a current controller, and the more voltage or pressure you have the more current is pushed through the resistance we encounter. It is the amount of current that does the work, and a milliamperemeter is the proper thing to have in the circuit that we may know how much current is passing through. Although the amount of current necessary in any certain case has never been definitely determined, it is a satisfaction to see the indicator upon the meter move and to know that the patient gets just what is indicated upod its face.

Let the battery have at least a pressure of forty or sixty volts. Less may do some of the work, but you have a reverse force for other cases. Your current controller should increase and decrease the resistance gradually and not by steps. It should be of graphite or carbon with the patient in shunt. The electrode should be supported and controlled by the hand. A good meter with range of scale to five or more milliamperes, graduated in one-tenth milliampere divisions, should be in the circuit. With such apparatus, and by paying due regard to polarity and the electro-sensibility of your patient, you will have no reason to regret the use of this valuable agent. If you have not the time to devote to it do not attempt its use. If you are not overburdened with practice there is no better way to increase it than by its judicious use.

DISCUSSION.

Dr. J. Rollo Knapp asked Prof. Neiswanger to explain why, in view of the decomposition and waste of the two metals used in the battery cells, there was not a corresponding waste in the two metals used as fillings in a tooth. Is the loss so very gradual that it is imperceptible? Dr. Neiswanger replied that it was probably because the two metals were not kept submerged.

Dr. Marshall said that Dr. S. B. Palmer had established the fact years ago, that there is a current between the two metals in a tooth until the surface is oxidized, as seen in the blackened surface of an amalgam filling.

Prof. Neiswanger spoke of the importance of knowing which pole to use in applying medicaments. If potassium iodid is used at the negative pole the iodin would act as an acid and seek the positive pole, the potassium remaining at the negative. On the other hand, if the potassium iodid was applied on the positive pole, the iodid would remain at the positive, and potassium, the metallic base, be carried to the negative and left in the tissues. If a copper needle is used for the positive pole the copper would be decomposed by the action of oxygen, the copper going to the other pole; and in this way it would almost equal bichlorid of mercury, besides being non-toxic. Solution or compounds are always decomposed, the base remaining at the negative, provided there is sufficient current to effect the decomposition. With cotton and the alternating current you can produce a local anesthesia of the teeth, tetanizing the nerve through fatigue of the muscle.

Dr. John Marshall said that he had valuable results in that line, in relieving pain and reducing inflammation and congestions. No medicament is required, the current itself contracting the muscles of the blood vessels and producing anemia of the parts.

Dr. price spoke of the various theories as to the action in cataphoresis, and said: When all the various theories have been analyzed, we are forced to the conclusion that it is electrolysis, pure and simple, with perhaps some osmosis.
—*Ohio Dental Journal.*

ARTICLE X.

UROTROPIN.

BY J. A. FLEXNER, M. D.

The favorable reports that have come to my notice regarding urotropin lead me to think that some additional facts concerning it may not be amiss. Urotropin is a derivative of formic aldehyd, and not a coal-tar product. The well-known antiseptic and preservative power of formic aldehyd in solution led Nicolaier, of Gottingen, to use the solution of formic aldehyd, containing forty per cent. of the gas, and known as formalin, as a means of preserving specimens of urine from decomposition pending examination. He noticed that neither uric acid nor the amorphous urates were deposited, though the same specimens not treated with formalin deposited either or both, as the case might be. Even when already precipitated these substances underwent solution when formic aldehyd was added to the specimen. Urines that readily deposited large amounts of uric acid when acidulated with a mineral acid did not do so when a sufficient amount of the preservative was added.

The results of these investigations prove very conclusively the great uric acid solvent power of formalin The reputation of the lithium salts as uric acid solvents is caused by the common error of applying the results of laboratory experiments to practical therapeutics. The fact that lithium forms an insoluble phosphate, and that the blood and urine contain considerable amounts of soluble phosphates, show that lithium salts, given by the mouth, must form insoluble phosphates of lithium long before they can combine with the uric acid. In this respect it is no exception to the chemical law that when the ingredients for the formation of an insoluble body are present in a mixture this body will always be formed. Medical opinion has for a long time attributed the success attending the use of the lithiated waters to the water and not to the lithium that they contain. A similar error obtains in the case of some more recently introduced substances, lycetol, lysidin, etc. They do not, in the urine, form the very soluble uric acid combinations that they do outside the body. Formic aldehyd being too irritating to be taken internally, Nicolaier then determined to try its amine combination as a substitute. This substance, hexamethylen-tetramin or urotropin is non-poisonous even in considerable quantities, is unirritating, very soluble in water, and is as good a uric acid solvent as formic aldehyd itself.

The name urotropin was given to it on account of the changes which its administration brought about in the urine. Alkalin and putrid urines, containing mucus in excess, pus and pus organisms, uric acid or amorphous urates, were rapidly restored to a normal appearance and an acid reaction. The urine was sterilized and increased in quantity; and calculi and deposits were dissolved. Hence urotropin is a most valuable resource in all suppurations of the urinary tract, and in all gouty and rheumatic conditions where an active eliminant of uric acid and its salts is indicated. A further valuable property of urotropin is its faculty of combining readily with salicylic acid and forming a soluble combination. A solution containing from ten to fifteem grains each of urotropin and salicylic acid to the fluid ounce of water, or other suitable vehicle, has the further advantage over the salicylates alone in that its taste is not disagreeable. It appears to be far less irritant to the gastric mucous membrane than solutions of salicylic acid usually are, and the combination promises to have a wide range of therapeutic usefulness.—*American Practitioner and News.*

Monthly Summary.

GOLD FILLINGS INSERTED WHILE CAVITY FILLED WITH SALIVA.—Mr. R. Heide, Professor of the Ecole Dentaire of Paris, had the pleasure to submit, at a meeting of Odontological Society, February 2nd, 1897, teeth filled by Dr. Herbst with sub-marine gold. Sub marine gold is a special gold 60 in thickness, therefore very thick, but nevertheless very soft and malleable; it is put in the form of pellets. With this kind of gold not only central cavities can be filled, but proximal cavities also, providing that the walls are very strong, not recommended for building loose part of tooth, such as corners, etc. Instruments used for the working of this gold are simple. First, a large polishing bur; second, same as first but unpolished; two pluggers for soft gold, this will constitute the whole. *Modus faciendi*—introduce large pellets of submarine gold with pluggers, then use bur No. 1, when in place fit in the gold, adding more gold till the cavity is filled. It is known for a long time the way of excluding humidity caused by saliva, by the use of the rubber-dam, but before these operators were subject to many inconveniences on account of the saliva, rendering work very tedious, and in many cases the work would not be finished properly. Sub-marine gold does away with these annoyances. Dr. Herbst recommends to dip the pellet of gold to be used in water so as to make its introduction more easy, rendering the filling more dense. "I will make a personal remark," says Dr. Heide; " this way of filling resembles very much to the plugging of soft gold with pointed pluggers; but the finishing is done with burnishers applied on dental engine, then finished with corondum wheels. Dr. Herbst says that it is quite easy to add sub-marine gold to any fillings that are defective. The interesting point in this method, which is about the same as others in the way of filling with gold, is this: The peculiar quality of this gold, the limited number of instruments used for inserting a filling, is certainly a credit to Dr. Herbst, the eminent practitioner that every one has heard of—M. R. HEIDE, *L'Odontalgie.*

RONTGEN RAYS.—Referring to the great discovery of Professor Rontgen, and the applicability of the rays to gunshot injuries, and the impaction of foreign bodies, the editor remarks: "From the considerable difficulty experienced in adjusting the apparatus to the mouth the results, so far as the teeth are concerned, have perhaps not been quite as perfect as they were expected to be, still a good deal has been done. This suggests the value of the method of examination in those cases in which the unerupted bicuspid is removed to allow the incisors to fall back—an operation sometimes attended with considerable difficulty when the bicuspid is abnormally placed to the second temporary molar. The production of a photograph, such as shown by Mr. Harrison (at the meeting of the Midland Counties Board of the B. D. A.,) would be a valuable preliminary to the operation. Owing to the difference between the density of the tooth issues and the open bony tissue of the alveolar portion of the jaws, the teeth stand out in Rontgen photographs quite clearly from the surrounding bone, but usually—especially in the upper jaw—show a considerable amount of distortion. As far as methods are concerned, we believe the best results have been obtained by using a sensitive film in the mouth rather than a glass plate, the film, of course, incased in some light, tight material impervious to moisture, being capable of firm adaptation to the mucous membrane of the mouth. We cannot but think that there is still a future for this method of diagnosis in dental surgery, and with the more perfect knowledge of the nature of these mysterious rays, which time will assuredly bring, many of the difficulties attending the production of the radiograph will be removed."—*Journal of British Dental Association.*

THE CARE OF VULCANIZERS.—In spite of the fact that vulcanizers sold by reliable manufacturers are submitted to severe tests by hydrostatic pressure—some of them to a pressure of nine hundred pounds to the inch—explosions have not been unfrequent, generally due to the ignorance of the assistants who watch them, or pretend to watch them, during the process of vulcanization, and not a little to the carelessness of the dentists themselves, who fail to impress upon the students that these little steam boilers require as much attention as boilers of a greater capacity. In the first place, it does not pay to use cheap vulcanizers any more than cheap German tools and instruments, or the cheaper grades of artificial teeth. In the next place, one should familiarize himself with every part of the machine; realize the importance of keeping it and its belongings clean, and adhere strictly to the rules laid down by the manufacturers. Where thermometers are used it ought not to be forgotten that too rapid and too great heat at starting, especially if the flame is allowed to surround and reach the top cover, may deceive, and that the thermometer at 320° may really indicate only the temperature of the cover, and not that of the flask inside. The safety disk used on some modern vulcanizers should not be forced on too tight, as this weakens them. The boiler should on no account ever be perfectly full of water: at least, one inch or more of steam room should be left above the water, When the heat is first applied, the valve for the escape of steam should be opened for a few minutes to allow a free escape of steam, as this leaves in the boiler, after the valve is closed, an atmosphere of pure steam. and precaution should be taken not to use any more force in closing the valve than is necessary to make it steam-tight. We are warned, too, not to daub too much blacklead or soapstone powder about the packing. In fact, it is better never to use any if it can be avoided. Oil should never be used, as it rots the rubber packing, and may become gummy and cement the core to the pot, to the damage of the rubber packing. Too frequent use of the blacklead and soapstone wears away the screw thread. In heating up, the flame should not be larger than will cover the bottom of the boiler. If students can have these simple instructions put into their brains, it may save some of them from having their heads blown off. If they will not attend to them they deserve to be killed. Thermometers, in the cities, ought to be relegated to the list of things which are obsolete in the laboratory. Proper gas regulators and steam gauges should be used, and dentists owe it to themselves and their students not to neglect every proper precaution in the use of these laboratory demons.—*Dominion Dental Journal.*

VALUE OF MEAT EXTRACTS.—Professor Von Voit, of Munich, Germany, has investigated the extracts of meat and announces that such extracts have very little nutritive value, if any, and that their action is almost entirely a stimulating one, being due to their contents of alkaloids, such as creatin and creatinin.

BLOOD STAINS.—The statement has been lately published that a warm solution of tartaric acid is most efficient in removing blood stains from towels, aprons, etc. Acetic acid has long been in use for this purpose, and either acid will probably answer equally well.

HINTS.—By a Lazy Man.—1. You can buy prepared square cakes of pumice stone which are very convenient for cleansing the hands, polishing dirt off tables, and softening the stiff bristles on your chin before shaving. Only be sure and get it all off your chin before using soap and your razor.

2. After removing the bolts of your flasks, dip the screw in a bottle of oil convenient for the purpose, and they will always be easy for use again.

3. A first-rate laboratory bench-block may be improvised by securing on the table, one of the rubber-tipped door stops sold for the purpose of keeping doors from damaging the wall. They can be screwed into the table anywhere and in any position.

4. If your hands are dirty you will dirty rubber in packing sets. and the dirt remains, and even seems to penetrate deeper than the surface you wish to polish. The pumice block is a good thing to clean solid rubber before you pack.

5. A common soup ladle with holes made in the bottom to let the water out, is useful to lift hot flasks out of hot water.

6. A small hoe, used to scale fish, is useful for scraping hard plaster from the bench.

7. Articulators and head-rests are two articles which the capacious brains of our mechanics should improve.

8. I never need rubber scrapers—hardly ever. If you prepare your pattern plate properly, and are not too mean to buy well made pattern wax, your plate should come out ready for the sand-paper.

9. Do not use oil or shellac varnish to keep the second part of the plaster from sticking to the first in filling flasks. Keep a pot of the soap suds; after soaping the plaster, run water over it. It will not stick.

10. You can buy at any hardware store a neat, round and cheap asbestos plate on which to put rubber when you are packing. Clean and convenient.

11. You can buy in rubber stores, rubber fingers, which are useful if you have to finger foul mouths, and are just the thing to have on the finger of the hand which you use in the mouth when keeping the lips and tongue out of the way in extractions.

12. If you use beeswax or compound, have it ready rolled in thin sheets to save time.

13. Sulphate of potash always kept uncovered loses its value for hardening plaster.

14. If you insist upon placing a porcelain crown, either with or without a collar, upon a very hollow root with an opening larger at the neck than towards the apex, do not use amalgam as a retaining cement around the metal pivot. Thoroughly dry the root cavity; wipe it out finally with the merest suggestion of oil of cazeput, then pack it tightly with warmed gutta-percha—not the pink used for pattern plates—heat the metal pivot; work it into the gutta-percha, packing as well as you can. I prefer it to anything else.

15. After operating for patient afflicted with pulmonary tuberculosis, sterilize your instruments, hands, etc., as carefully as if you had been operating for a patient suffering from syphilis.

16. Some of the trouble which occurs in the vulcanizing of dental caoutchouc, is occasioned by a hap-hazard way of raising and retaining the temperature. If the directions advise you to keep the temperature at 315 degrees Fahr. for one hour and a quarter, it is a mistake to keep it at 320 degrees for an hour. In the matter of proper vnlcanizing, the slow and sure method in heating and cooling is the best.

17. If you buy a new drug, do not use it until you know all that is worth knowing about its action and uses, and if a a poison, its dangers and its antidotes.

18. A properly adjusted Auer light is away ahead of any electric light, if you are obliged to use artificial light at the operating chair. It is nearer the natural light of day than any other.

19. Keep your dental engine, chair and spittoon covered from dust at night. Do not use too much oil. Dirt is the bane of the dentist.

20. If you have rough hands from handling flanks, etc., wash well with hot water and soap when going to bed, rub vaseline on them thoroughly, and pull on a pair of large sized gloves.

Too lazy to say more just now.—*Dominion Dental Journal.*

EXPERIENCE.—By L. D. S.—He is a wise young man who is eager to profit by the experience of his seniors. Experience is a thing which cannot be found in books, or even obtained altogether from the experience of our seniors. One must get the most of it for himself. It is not an article that he can wholly transmit to others. It is a part and parcel of his own individual existence; as much as his own breathing and sleeping and eating. In trade and commerce, politics and the profession, it is a commodity of commercial value, which is reverenced and respected by wise and thoughtful men.

In the December issue editorial comment was made upon the want of sound judgment by many whose practical skill may be superior. It opened to my mind, as an old practitioner, a whole flood of recollections past and present, in my own career and that of others, and brought back vividly to me many a disappointing moment. Any one who ever witnessed the eminent and aged Dr. W. H. Atkinson, with his double pair of spectacles, performing the most exquisite operations, or who is familiar with the skilful work and sound judgment of the older school of operators in Europe and America, must appreciate the vigor of mind and body which makes such work possible. One does not find men of experience risking the wreck of reputation upon the wholesale insertion of crowns and bridges, and indulge in the fantastic fads —or frauds—of many of the junior practitioners. Perhaps I should not call them "frauds"; generally they do not know any better; and knowledge is the result of experience. A man of experienced practice can readily acquire any new practical idea which presents itself. But his experience helps him whether to accept or reject. And the judgment necessary in the latter is quite as valuable as in the former. We English people would be all the better for a little more of the Chinese reverence for age and experience.—*Dominion Dental Journal*

INGRATITUDE.—We delight in calling ourselves a scientific profession. But the bold facts of the case are, that while we have done very much in the applied sciences, our real scientific work has been confined to a very few individuals, who have mainly had their labor for their pains. The two most conspicuous examples of this are Miller and Black. The former ruined his health and sacrificed everything that usually makes life attractive, in his pursuit of scientific investigation for the benefit of his fellow practitioners. He published the cream of his discoveries in a book, the half of the first edition of which yet rests on the publisher's shelves. Men give him any amount of cheap applause, but they decline to spend two dollars in purchasing the record of his work.

Black has written a number of works of merit, and yet not one per cent. of the dentists of America have even a superficial acquaintance with what he has done. The only remuneration that he has ever received has been from the colleges which, in the estimation of those whose work consists in words instead of deeds, have done so much to debase dentistry. That is the way we of America too often foster and encourage scientific investigation. That is the way we are inclined to pay the debts incurred to those who work instead of talk. And it is a singular fact that those who talk the most have done the least. But after all, that is nothing strange. It is the usual way of the world.—*Dental Practitioner and Advertiser.*

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ARTICLE I.

NECROSIS OF HARD PALATE.

BY DR. H. C. GILCHRIST, NYACK, N. Y.

Read before Second District Dental Society, Newburg, N. Y., October 11, 1897.

We often meet peculiar and interesting cases in our practice which are worth recording, as they may be the means of helping others in the future if they should meet similar cases.

One day during the summer of 1893, there came to my office a young lady about twenty-three years of age, to consult me about a large swelling in the roof of the mouth, extending from the incisors to the soft palate, being one inch in thickness.

Upon getting the history of the case, I found that some time previously she had had a central incisor that had abscessed; her dentist having failed to destroy the abscess, she, in a fit of desperation, went to her family physician and had the tooth extracted.

A few days after the extraction the swelling appeared in the roof of the mouth; her physician after repeatedly lancing, finally told her that it was only a lump of flesh, and that it would "disappear after a while"; such was the condition when she came to me for advice.

Upon examination I found that the abscess sac was filled with pus, although she said her physician had lanced it that morning. I found he had lanced at the highest instead of at the lowest point, and consequently had not evacuated the sac. I then inserted my lance in the bottom of the sac, whereupon it discharged about half an ounce of thick yellow pus, which gave her immediate relief, much to her astonishment, as her doctor told her that there was nothing in it.

In a few days she returned with the swelling as large as ever. Again I evacuated it. This time I found that it was distinctly bone pus. I then came to the conclusion that there was necrosed bone, whereupon I took a small piece of broom straw, having first thoroughly soaked it in carbolic acid, then coating it with vaseline, I inserted it in the opening made with my lance and tied it fast to one o the incisors. This kept the abscess open and allowed the pus to discharge.

This I kept in the pus sac for two weeks, when I found that a fistulous opening had occurred at the junction of the soft and hard palate, and upon passing my probe through the opening, I found a peculiar roughness that led me to believe that there was a piece of dead bone trying to exfoliate, whereupon I gave the patient a small syringe and some hypo-sulphite of soda, with which I directed her to syringe out the pus sac twice a day. This treatment was continued for three weeks, reducing the sac very much in size, when upon examination I found that the necrosed bone had detached itself. I placed the patient under the influence of nitrous oxide, and opened the roof of the mouth from the central incisor, following the median line, to the beginning of the soft palate, having my assistant at hand with small sponges to care for the hemorrhage and prevent blood from getting in the air passages.

After turning back the flaps, I found the piece of necrosed bone which I removed. It was a piece of the superior maxillary from the left side—one half of an inch in length by one-sixteenth of an inch in thickness. After washing out the cavity with bi chloride of mercury (1-10,-000) I drew the edges of the flaps together and placed in four ligatures of waxed floss silk, which had been soaked in bi-chloride of mercury. I then placed in a small piece of broom straw again, to act as a drainage tube. In a week's time, the parts being united, I removed the ligatures. The next week I found that there was no discharge, and then removed the drainage and discharged the patient.

About a month after I saw the patient, and the mouth was thoroughly healed and in a perfect condition.—*Items of Interest.*

ARTICLE II.

THE TREATMENT OF TEETH HAVING PUTRESENT PULPS.

BY DR. F. P. HAMLEY, HEMPSTEAD, N. Y.

Read before Second District Dental Society, Newburg, N. Y., Oc., 11, '97.

Treatment may be said to be experimental. Knowledge obtained through experimentation is the most valuable, and for the treatment of disease it is always best to prescribe that treatment which has been founded on experiment and practice—for "experience is the best teacher."

But in the treatment of diseased teeth, we never seem to have experience enough. Although we may flatter ourselves that we are capable of soothing any ill that a tooth may have, we find times when that experimental knowledge fails. Then we do not all have the same ideas about disease, or the treatment of disease, and we are treating teeth variously as the result of individual experiments.

The question then arises—Should we adhere to any fixed treatment in our efforts to save diseased teeth? You can appreciate what I mean when you call to mind that severe case of toothache, upon which you have applied all the remedies in your cabinet with but little relief to your patient, and after many vain attempts to soothe the pain, you go to your supply of drugs and discover some medicine, or combination of medicines, which you have never tried before, and upon applying it, the sufferer is relieved.

Medicines do *not* then give the same results at all times, and for this reason the treatment of disease must necessarily be experimental But this experimenting must proceed with intelligence. The operator must possess some knowledge of diseased conditions, and also know the actions of the medicines he has at his command.

The young graduate finds his first patient suffering with toothache. He cannot determine from an examination what is the cause or the nature of the trouble. From the apparent suffering of his patient, he decides to "kill the nerve" as a means to stop the ache, so he proceeds to use arsenious acid, applying it, though unconsciously, to a nerve already congested, and inflamed. The patient—"Oh, where is he?"—crazed with pain, and likely to suffer long after the pulp is dead. What is the cause of this prolonged suffering? The irritation caused by the action of the arsenious acid has inflamed the inner membranes, found its way through the dental tubes, destroying the albumen, cutting off blood supply. But before it has caused such utter destruction, the tooth is filled and may keep quiet for months, perhaps years, or until the effects of the poison reaches the cementum; the tooth then becomes a foreign substance—as foreign to the delicate membrane as a piece of wood. Nature rebels. Pericementitis sets in, and it is an act of mercy to extract the tooth before greater trouble asserts itself.

Some mechanical or surgical means to extirpate a pulp is far better than the unlimited use of destroying agents. A tooth can certainly be treated and filled in less time, and with better results.

The treatment of devitalized teeth is wearisome indeed, and the length of their usefulness is limited. We have men who boldly assert that they never have trouble with a devitalized tooth, because their method is so thoroughly effectual. In fact there is nothing left to cause after trouble. How do they know there is nothing left? Is it that their sense of smell is so keen? Their touch is delicate? Their sight so perfect? Or by the number of times the cavity is washed? Certainly they must have some means of knowing just when the tooth is sufficiently treated, so that forever after it will be peaceful. It seems to me quite impossible to know this without a doubt. We cleanse the tooth to *our* satisfaction, but that does not necessarily mean that nature approves of it. Nature becomes offended at slight causes. We remove pulp in all stages of decomposition, and though we are careful to follow that method, which is thoroughly clean, we are nevertheless sometimes disappointed in our efforts.

The best therapeutic medicaments for the treatment of diseased or devitalized teeth, are those which meet the conditions.

In a tooth where the pulp has already dissolved, becoming putrescent, we have a pathological condition which requires the greatest care. The medicaments must possess, first, the power of destroying the products of putrefaction; secondly, the power of destroying the agents of putrefaction; and thirdly, to have the power of coagulating or permeating the remains of the dental fibres.

Sulphurated hydrogen gas is the product of putrefaction, which is generated by the decomposition of dead pulp. Decompose the gas by using iodoform, also a deodorant—remove all dead matter and we are ready for the second pathological condition—the "agent of putrefaction"—wash thoroughly with oil cinnamon or eucalyptus, the former preferred, seal the tooth temporarily, leaving oil cinnamon in canals for a week or more.

The third pathological condition can be best treated by forcing into the remaining tooth some preserving fluid —a fluid which will incorporate with dead albumen. Chloride of zinc or creosote, or both in combination, has proven satisfactory and generally reliable. It readily permeates the dentinal tubuli and puts the remaining tooth structure in a state of health.

We have then three conditions to meet in the treatment of diseased teeth before filling them :

1. To destroy the products of putrefaction.
2. To destroy the agent of putrefaction.
3. To charge the tooth with an agent of preservation.

Chloride zinc being a coagulant, converts all the fluid matter remaining in the tubuli into a consistent state, and for that reason great care should be exercised in applying it at the right time.

A very extensive paper treating of this subject was read by Dr. A. W. Harlan at a dental meeting held in New York City. Dr. Harlan claims that the use of a coagulant at the first stage of treatment, closes up the mouths of the tubuli and prevents antiseptics going through the tooth, while Dr. Barrett, in the *Dental Advertiser*, claims that the very first requisite is coagulation, and that coagulation is the very thing that should be brought about.

Dr. Barrett then attacks the pathological conditions in this order :

1. "Coagulation of the dentinal fibre."
2. "An opportunity to melt down." (To dissolve, I presume, is meant.)

3. Careful sterilization.

3. Sealing of the tubuli.

He uses coagulants, while Dr. Harlan discards them.

My order of treating putrescent pulps may occasionally fail, but I have faith in it for the majority of cases which come under my care. First, open the pulp cavity well if it has not already been done, and before removing any of the putrescent matter, destroy the product of putrefaction which is the sulphuretted hydrogen gas, formed by the decomposed matter. For this I use iodoform carried into the tooth in powder form. Then destroy the agent of putrefaction by washing with antiseptics and sealing the cavity, having first charged it liberally with oil of cinnamon, or eucalyptus, the former preferred, letting it remain closed for several days.—*Items of Interest.*

ARTICLE III.

VALUE OF EXAMINATION OF THE MOUTH IN THE CHOICE OF A NURSE.

BY DR. V. JARRE.

Reported by George Randolph, Berlin, Germany.

Doctors and midwives are usually guided in their choice of a wet-nurse by several general considerations, amongst which there is one, the value of which has hitherto not been sufficiently appreciated, viz., the examination of the mouth.

Mauricean, who is even to day an authority on such questions, demands a nurse whose mouth is absolutely healthy; whose teeth must be white and sound without any caries, because in kissing the child constantly, she would infect its lungs by making it breathe her foul breath. Every wet-nurse ought to present herself with a mouth in perfect condition.

But it is well known that the dental caries is very frequent in our white race, and there are in France for example, vast regions where the complaint is so common that one very rarely finds a young woman with all her teeth sound.

The presence of one or more carious teeth does not constitute an immediate danger of inflammatory and septic complications. However, such teeth may be the seat of painful sensations, produced either by the contact of hot or cold food, or by the pressure of some hard food entering the cavity, during mastication. Such accidents may bring on a more or less pronounced functional disturbance, affecting the nurse's milk. Moreover it is well known that the period of nursing, as well as that of pregnancy, prediaposes the advance of caries in quite a peculiar manner.

The conclusion to be drawn from these considerations, is that treatment of all cases, followed by filling of the cavities, ought to be imposed upon every wet-nurse, who suffers from dental lesions either at the beginning or during the course of nursing.—*Items of Interest.*

ARTICLE IV.

NEW OPERATIVE METHOD FOR THE RADICAL AND RAPID CURE OF CHRONIC EMPYEMIA OF MAXILLARY SINUS.

Reported by George Randorf, Berlin, Germany.

Mr. Luc, after having reminded us that the radical cure of the malady in question is one of the most difficult in rhinology, attributes the frequent failures of the different nasal and buccal operative procedures, to the former, allowing an insufficient means of reaching the seat of disease, and to the latter keeping this in too prolonged communication with the mouth, thereby exposing it to fresh infection. He has avoided the inconvenience of both these proceedings, and has united their advantages by the following method:

1. Free opening of the maxillary sinus, through incision of the gingival mucous membrane with the bistoury, at fifteen millimeters over the neck of the teeth, stamping of the mucous membrane with a rasp, and resection of the greatest part of the outer wall of the sinus;

2. Careful removal of all fungus in the sinus by means of electric cautery, and cauterizing with a strong solution of chloride of zinc;

3. Establishing, by means of chisel and mallet, of an orifice of communication between the sinus and the nasal cavity at the level of the lower part of the inner wall of the sinus;

4. Introduction of a drainage tube through the artificial opening; the tube is held in the cavity by its widened end, and emerges at the other end, through the nostril;

5. Reunion of the buccal wound by means of fine catgut, after the cavity has been well powdered with iodoform.

The buccal wound is cicatrized after three days, and the seat of the disease thus protected from the danger of buccal infection, is no longer in communication with the outer air except by the nose. During the following days the sinus is kept antiseptic by the drain, by means of injections of etherial iodoform, and irrigations with solutions of formal or boric acid. After a fortnight the drain is withdrawn from the nose by a slight traction, and the cure is complete.—*Items of Interest.*

ARTICLE V.

SHALL THE DENTIST ADVERTISE?

BY WILLIAM W. BELCHER, D. D. S., ROCHESTER, N. Y.

The question whether or not a professional man shall advertise is not a new one. In the medical profession the position of the man who advertises in the public prints is well understood, but there is one difficulty under which our sister profession has not labored. The medical man has nothing to sell but his services; if, perchance, the physician constructed artificial limbs, crutches or eye glasses, the question would be a more troublesome one.

In dentistry the mechanical and professional are so closely interwoven that there seems little chance of their separation.

It is nice to be independent, to do business on a side street or in the top story of a lofty office building, and say, "if the public desire my services they may come where I am"; but are we doing our whole duty to the public?

In talking with some of the people who have patronized the dental parlors of our city, and who, after trying one quack have fallen into the hands of another, and finally come to me full of suspicion, with no confidence in mankind in general and dentists in particular, I have said to them: "There are dozens of men in this city who are giving honest and faithful services; why after you had one failure with the cheap man, did you not try one of them?" ,'Ah! but I am a comparative stranger and knew no dentists but those who advertise." What argument can be advanced to such a patient?

The question of advertising is one that must be decided on entering practice and to the average college graduate the question of immediate gain, or future gain with respectability, are trying ones, indeed, I have been surprised to learn from men who were full of years and honors that they at times had been tempted to thrown down the gaunlet, enter the arena of low fees, fatten their bank account and clothe their family in fine linen.

The man who is seeking the road to wealth is misdirected when he chooses the dental profession. The average dentist lives well, spends freely, dies poor and in debt.

Should the young man just starting in practice advertise ? I see no objection to his doing so in a professional manner. There are no such stricklers for the ethics of our profession as those to whom they have been but a bitter and grinding rule of conduct.

To have been heard of, if only once, is a great advantage with the new patient; the young man just commencing his career has a bitter realization of this fact, and while he is willing to conduct himself in a professional manner, feels the necessity of bringing his name before the public. He sincerely desires to live up to the code of ethics. But what would be advertising for him is ethical to the big fellow with a reputation who does not hesitate to see that his big cases are reported in full for the Sunday papers; at times they have been illustrated with wood cuts that could have come from no other source than the office of the operator.

Should the younger man desire to advertise his name and address in a select weekly, or church publication, which is not used by the quack, I can see no harm. Such advertising cannot be with any expectation of direct results; the effect is simply that the public becomes familiar with his calling, name and address; this is valuable to any man, whether running a grocery store or a dental office.

But stop with the name and address; do not even say "examinations free," and for heaven's sake keep out of the theater programmes and daily papers, for they are almost exclusively in the hands of the quacks, and for this reason the reputable man, feeling that there must be a dividing line between himself and the incompetent, refuses to advertise at all. I claim that if one city paper, of high standing, should make an effort to have a professional directory of medical and dental men, excluding the quacks and incompetents, society members exclusively, of accepted standing, each with name and address, it would be a good thing for the paper, the public and the profession.

Honor and glory are not nourishing, but to the true professional man dearer than wealth. Every man has two reputations; one among his professional brethren and one with the public. The first is most dear, but the latter brings his living and often we find a man with no professional standing who succeeds for a time in deluding the public, to the benefit of his exchequer. Many of us in the dental profession are woefully lacking in business principles, and perhaps the advertising dentist is better endowed than his fellows; but the advancement of dentistry has not come through the advertising offices; they are simply parasites, who live on the work of others, pulling them down by defrauding the public; they contribute nothing to the upbuilding or advancement of the profession or the investigation of new problems.

The man who advertises a "dental parlor," who decorates his office with valuable (?) oil paintings or advertises superiority over all his fellows, is to be avoided; likewise, the man who advertises cheapness, for if his services were worth more he could command the higher fee.

When we consider the preliminary educational requirements, the time and money expended, the standing of dentistry as a profession is not to be despised nor to be lightly traded for a mess of pottage by lowering it and your *alma mater* by resorting to the tricks and wiles of trade.

"Be good and you will be lonesome," says the humorous writer, but the only permanent foundation of a dental practice is honesty and ability. A loud tooting of trumpets and bragging in the daily papers will perhaps bring more immediate results, but not a desirable nor appreciative clientele, and will in the end be less profitable than a practice conducted on a dignified and professional basis.

There are many better ways of advertising—clean hands and linen, clean clothing, clean breath, clean instruments, and a clean office with modern instruments, a delicate touch, neat and tasty stationery, all are great advertisers, as are attendance and assuming a leading part in church and society work.

Every man should join his local dental society and take an active part. This is one of the best ways to advertise. No man is sufficient unto himself; if he be a superior dentist he owes it to his profession to join the society and demonstrate his superiority; if he feels himself deficient he should join the society that he make himself more proficient by exchanging ideas and methods with his fellows. It is not claimed that all the able men of the profession are society members; speed the day when this may be true; nor that every man who advertises in an unprofessional manner is incompetent, though this is true as a rule.

We have in our dental societies, men who compare well with their fellows in ability, honor and integrity, who have secured a practice by advertising with cuts of teeth and pictures, and after establishing a practice and not finding it necessary to continue advertising, apply to the society for membership.

What is your pleasure, gentlemen. Shall the man who has conducted himself in an unprofessional manner, join the societies on an equal footing with the young man who is just entering practice and trying to conduct himself in strict accord with the code of ethics ? Will he not also conclude to advertise, and when he has secured a practice become a society member ? If we expect him to follow the straight and narrow path, the reward of improper conduct should not be the too easy admittance in the society.

I am aware that the views herein expressed are not popular, but I believe they are based on common sense. "The name that dwells on every tongue no ministrel needs"; but there are other dentists who do not need the ministrel, and while there may be no good excuse for their being, they, too, must live.

ARTICLE VI.

THE ADAPTATION AND RETENTION OF ARTIFICIAL DENTURES.

BY A. O. HUNT, D. D. S., CHICAGO, ILL.

While this is an old subject, yet it is new and will continue to be so until there is some better agreement as to the principles involved in the operation.

These principles will not be well established unless they are based upon actual conditions present in mouths. They must also be broad enough to apply all the variations that present themselves.

Atmospheric pressure is one of the forces claimed as being essential in retaining the dentures, the pressure being produced by a central chamber in which a vacuum is produced. The force exerted is estimated to be from a few ounces to fifteen pounds to the square inch. This claim is entirely faulty. A vacuum cannot be produced in this way, and if it could, would only be of very short duration. Again, if it were possible to get the benefit of such force, it would be better to have it extend over the entire surface of the denture than to confine it to a small central area. Still further, it cannot be applied to lower dentures successfully.

Capillary attraction or adhesion is another force mentioned as all important in the retention of the denture. As whatever force of this character that might be utilized is based upon the laws of cohesion and adhesion, the limit of its operation is so small that it would be insensible in an artificial denture. If, however, the force was greater, it would be better that it should apply to the whole surface than to a part of it.

The conditions presented in the upper jaw are peculiar many times. The idea that a mouth that is flat is more difficult than a deeper one to secure good results should not be entertained. In general, in from six months to a year after the loss of the teeth, there are not so many difficulties in the way of good results. After a denture has been worn for a long time with only a partial antagonism with a few opposing teeth, the difficulties are multiplied. So also when the mouth is edentulous and no denture has been worn for a long time with only a partial antagonism with a few opposing teeth, the difficulties are multiplied. So also when the mouth is edentulous and no denture has been worn.

When the best model obtainable is at hand, a careful digital examination should first be made of the surface of the mouth, to locate and define the depth and form of the soft spaces within the area to be covered by the plate. These spaces and their form and depth should be outlined on the model, the depth indicated by figures, as it varies greatly in corresponding locations in the same mouth.

The *model* should then be scraped away in the various places to the proper depth so that the denture will bear evenly over its whole surface, keeping in mind that the central or palatal portion will not change materially, while the alveolar ridge is constantly changed by resorption.

For the upper jaw there are five localities where the denture will find a firm and reasonably permanent rest without undue pressure on the parts.

The palatal surface, two on the labial surface immediately over the region occupied by the cuspids, and two over the malar processes extending to and above the malar processes, extending to and above the maxiliary tuberosities.

For the lower jaw there are four localities for a firm rest for the plate, two on the labial in the region of the cuspids and two on the posterior buccal margins between the summit of the alveolar ridge and the attachment of the buccinators to the inferior maxillary. The greatest interference with a denture being retained in its place, as they are usually constructed, consists in the action of the muscles upon the margins of the plate to push it either up or down as the case may be, or oftentimes the posterior margin of the upper one extends upon the soft palate and is thrown down by its movement; or in the lower denture the posterior ends of the plate are so long that in opening the mouth the stretching of the tissues in front of the ramus move it forward.

While all the muscles may throw a deuture out of position, yet by a proper form of the margins, some of them may be utilized as the most important force for retention; notably, the buccinators and the orbicularis oris.

A careful examination of the attachments of these muscles should be made, and in shaping the margins their movement should be opposed to each other in such a way that they will be compressed upon the denture and hold it firmly.

If improperly made, patients never get the use of dentures until they learn to hold them in place by the buccinators, assisted by the tongue and the orbicularis oris.

With an even pressure over the entire surface of the plate in contact with the mouth, a free movement of the anterior frænum and the anguli oris muscles, the anterior border of the buccinator, the compression of the buccinator at the posterior borders and the compression of the orbicularis uris at the anterior portions, a free movement of the lingual and sublingual muscles on the interior surface of the lower denture, with plenty of room for the tongue, accompanied with a stable pressure on the hard or permanent parts of the mouth, will produce a perfect adaptation and retention of an artificial denture.—*Dental Review.*

ARTICLE VII.

THE FRACTURE OF PLATINUM PINS IN TEETH AND THE CRACKING OF TEETH IN SOLDERING.

BY E. DUVAL.

The fracture of platinum pins in teeth and the cracking of teeth in soldering is a difficulty, or rather annoyance, which occurs at some time or other to all interested in the mechanical aspect of dentistry. The following views, therefore, on this question, of some twenty men experts at the bench and of long experience may be of interest:

B.—Will solder 100 out of 100 teeth without accident. He generally bends pins towards root, sometimes rivets and sometimes bends only. Thinks some men are scanty with their backing, which should cover the whole tooth.

G.—Always rivets the teeth, but only slightly, and is very careful to get the heat up very gradually. Countersinks side of rivet. If a flat tooth rides on a stump, the chances are that the teeth will give in a short time.

P.—Has some teeth break, but does not think it is always the fault of the tooth, but considers that more break now than used to. Always rivets teeth, and countersinks side of rivet. There is great danger if teeth are touching on plate, they should never touch. Punches holes on boxwood, which causes depression. Depressed side goes next to tooth. The bur on the other side is filed away, and the hole countersunk.

L.—Always rivets, except where backing goes against vulcanite; pins are then left intact, only they are bent so as to form a hold in the vulcanite. Sometimes teeth crack across pins.

P. G.—Punches holes; and does not rivet; only slightly bends the pins together, and does not countersink. Has met with fractures of pins, and thinks them due to peculiarity of bit .

J.—Never has any teeth come off; does not rivet before soldering. Solders on plaster and sand mixed.

W. J.—Bends pins after punching holes, and lightly taps down with riveting hammer; then runs file over pins. He fits his tooth after backing is on, not before. Invests in plaster and sand. Carefully heats up. Rarely or never has accidents; might have three in a year among some thousands used.

S.—Used to rivet teeth, but owing to fractures and accidents had discontinued the practice. Prefers backing, countersinks holes both sides, and then without cutting off pins "nicks" them the way he bends them close to the backing, so that they come to lie at perfect right angles over the backing. Uses large numbers of teeth, and practically never has an accident.

J. P.—Does not find one tooth in a thousand break, nor the pins. Punches holes in backing, does not countersink, nor rivet, nor cut pins, but simply bends them rootwards to hold backing firm. Greatest danger is in the heating. Makes his cases nearly red-hot.

C.—Always cuts his pins short, and then splits them across, and bends them longitudinally. Countersinks slightly on both sides. Thinks accidents happen through over-heating, as on cracked or broken teeth solder can be seen on the side of backing touching tooth. Very rarely meets with fractures—practically never.

B. W.—Rarely cuts pins of teeth to shorten them, and does not rivet, but bends pins. Says side of backing touching tooth is already slightly countersunk by the pin of the punch; other side he countersinks. Solders as usual on sand and plaster. Thinks would warrant to solder 99 out of 160 without failure.

Ph.—His accidents are very rare; more frequent in vulcanite than in flat teeth. Countersinks backing on both sides; generally only bends pins. Likes alloy backing in preference to gold. Always solders on asbestos fiber.

W.—Rarely finds tooth breaking. Countersinks both sides; thinks fractures occur if backing does not perfectly fit back of tooth, for bad fit causes leverage. Does not rivet, and solders in sand and plaster. Thinks riveting a danger.

St.—Has very rarely pins break off or cracking; believes it is borax getting between tooth or backing, or overheating, which produces accidents. Always slightly rivets, and countersinks on side of rivet. Solders on plenty of sand and some plaster.

J.—Uses many thousands of teeth annually and does not have a tooth cracked or pins smashed once in three months. Thinks that he would use 99 out of every 100 teeth without any such mishap. Never rivets pins, nor cuts them short; only bends them over, and then file them down a little. Makes case red hot, after investing it in the usual way. Heats very gradually. Thinks fractures occur through overheating. Riveting tightly will be sure to make both go during soldering.

X.—Always countersinks holes both sides, and rivets before soldering. Has no accidents; if there are such, considers them due to tight riveting.

W.—Rarely or never has breakages of pins or cracking of teeth. When holes are punched in backing, he only slightly countersinks side nearest to tooth; the side of rivet he well countersinks, and then rivets slightly, as hard riveting causes a great strain and weakness. Cases when invested should be heated very gradually, and cooled very slowly. Non-attention to these points will bring about certain mishap. Thinks, as a rule, would fix 99 out of 100 teeth without failure. Has in hand the case of a lady who persists in having teeth fixed in and out; the same teeth have gone through the fire three or four times without the least accident.

H. M.—Does not have any teeth breaking off; if a breakage occurs, it is due to the bite; but accidents will arise if the backing is not brought close to the tooth.

Sometimes there is a bur at the holes, or a little porcecelain bump is sticking up on the back of the tooth. Only bends pins; but if bite goes on pins, he rivets. Backing should be brought right up to cutting edge. Remove wax with boiling water, and of course heat gradually.

G. R.—Punches holes in backing; then countersinks on side where pins are bent; then cuts pins, so that when each is bent towards the other, they touch transversely. Cuts a little groove in backing with sculptor, files inside of each pin, and then they bend easily. Heats gradually; never has fractures of pins or cracking of teeth.

C. H.—Has had pins come off in flat and vulcanite teeth. Does not countersink on rivet side. Teeth sometimes give way months and years after making. He simply cuts pins off, and bends them together. Always solders on plaster alone.

H. A.—Rarely or never has breakage. Thinks men are careless in punching holes, and thus strain on pins breaks these off. If at any time he finds pins do not readily slip into the holes punched, at once uses fresh backing. Thinks some men in bending pins do it close to porcelain, and thus break the pins really before the case is soldered.

J. H, N.—Prepares backing by punching holes, which are countersunk on both sides and bent over, and sometimes slightly riveted. Pins and backing are carefully scraped. Fits tooth sometimes before and sometimes after backing. Accident the rarest thing. Considers failures due to riveting too hard and general carelessness.

R. T.—Takes backing, punching holes, and countersinks on side where he rivets. Always rivets, and does so on the side which goes on to the tooth; he then runs his sculptor across backing, taking in the two holes also. Sometimes he finds a little ridge of mineral near pins. In that case he bends backing a little to allow for it. Riveting ought to be done on lead, and the lead often changed, as it soon gets condensed. One ought to be careful not to use too much borax, as excess will cause accident if it gets behind backing. Never has teeth crack or the pins fracture.—*Journal British Assotiation.*

ARTICLE VIII.

TREATMENT OF PROTRUSION OF THE LOWER TEETH.

BY DR. J. N. FARRAR, NEW YORK.

Anterior displacement of the lower law resulting from loss of side teeth (thus permitting the two jaws to approach nearer each other than is normal) causing the front lower teeth to slide, scissors-like, upon the labial surfaces of the upper teeth, may sometimes be corrected by so grinding the front teeth that a part of the ends of these teeth will occlude and gradually slide each other into their proper relations. When the abnormality, however, is caused by disproportion in the amount of alveolar tissue constituting the alveolar ridge, or by two short side teeth causing a difference between the places of the antagonizing ends of the side and front teeth, it is found that the lower ones are generally found so far anterior to the upper that grinding would not often prove beneficial. If the difference between the planes of the arches is too great to correct by grinding, the teeth of the two jaws should be removed in the directions that will cause the best outlines of the face, and then force the proper occlusion by grinding the interfering parts.

For correcting a displaced lower jaw one of the best plans is by the use of gold thimble crowns, cemented upon the side teeth; the heading of the thimbles being so inclined that by occlusion the lower jaw will tend to slide posteriorly.

In cases where the upper front teeth require to be moved forward and outward it may be done by causing absorption, or by springing the outer plates of the sockets outward until the best possible contour of the upper lip is accomplished. The object of this is not only to place the front upper and lower teeth in better relation to each other, but, if possible, to move anteriorly and make more prominent the bony foundation of the upper part of the sunken upper lip and the sunken alæ of the nose. This latter change, moving of the bone, however, cannot always be accomplished without injury to some anterior tooth. This arises from too great strain upon the lateral incisors. In order to form the best outline or contour of both lips in such cases, it is sometimes best, all things considered, to let the lower lip fall a short distance, by moving posteriorly the lower front teeth. When there are no missing side-teeth, it is sometimes necessary to extract one tooth on each side to permit the moving of the front teeth posteriorly. Occasionally, however, extraction of one of the incisors (lower) and closing the space thus made by forcing postertorly the others will suffice for this end. To bring about the highest degree of facial beauty cannot always be done by following strictly the rules laid down by sculptors, where there is abundance of material and opportunity to obtain any effect desired; but the aim should always be to obtain the highest possibilities toward harmony of all the features that the conditions of the case may permit.

PROTRUDING LOWER AND RECEDING UPPER TEETH CORRECTED BY AN INCLINED PLANE.

To show the value of an inclined plane, the case of a girl about thirteen years of age is given. Her side teeth, molars, cuspids and bicuspids, were very short, and although the roots were not fully developed, the side teeth had erupted sufficiently to occlude properly. The lower incisors, however, were more than an inch anterior to their proper places and occluded anterior to the upper incisors, the wrong contact causing both the upper and lower teeth to continue to move each other still farther out of place. The lower lip, as a consequence, was of course too prominent, and the upper one not sufficiently so.

The patient could by effort draw back the lower jaw so as to permit the edges of the upper and lower incisors to occlude, but could not draw it sufficiently back to enable the lower incisors to occlude posterior to the upper ones.

All that was necessary to give the short side teeth an opportunity to further erupt, and at the same time force the lower incisors backward and the upper ones forward, was to wear an inclined plane on the lower teeth. This plane was beveled to such an acute angle that all the incisors, upper and lower, moved at the same time oppositely. *Dental News.*

ARTICLE IX.

IS THE DENTAL PROFESSION CROWDED?

This is a question often presented in private conversation between dentists, and sometimes at dental meetings. That the profession is crowded hardly needs to be affirmed. Only a few more years and every nook and cranny of the country will be jammed as are now the towns and cities.

From Canada comes the word that they are overflowing and still they come. The dental statistician will say that a certain per cent. of the older practitioners die every year; and that a certain per cent. of the recruits practice only a little while and quit. And yet there is a large increase in the ranks every year. The State of Georgia added 18 per cent. last year. The over crowding of any business sharpens competition. Sharp competition tends to lower prices.

The professions are not exceptions to this rule; certainly the dental profession is not, for a large part of the world does not yet look upon it as one of the learned professions. And will they do it so long as teeth are held in the jaws by gomphosis, and can be removed without physical disability following?

A dentist's standing is rated by the public by the "sticking of his fillings." His scientific attainments go for naught if his mechanical ability is not sufficient to make fillings "stick." These truths may be humiliating, but they are truths nevertheless, and tend to prove that it is easier to overcrowd the dental profession than that of medicine. though it is almost crowded to suffocation.

The cutting and slashing of prices tend to lessen professional enthusiasm and ambition, and if carried far enough, result in charlatanry.

Is this pessimistic? We think not. One only needs to turn to the advertising pages of the journals to see the number of dentists who are now supplementing their living by the manufacture of articles for sale. We are not alluding to the classes, but to the masses. Often have we heard Dr. Crawford, on the floor of convention halls, declare, "There are not enough dentists to keep the tartar off people's teeth." That is, provided the people want the tartar taken from their teeth. As our Canadian correspondent writes: "The question of overcrowding is usually switched off to educating the people up to a sense of dental appreciation." *When* they are so educated, then there may be room for the annual 18 per cent increase. Five years' output at that rate will double the number of dentists. Can any one predict other than a mere existence for the mass of dentists? We are told that the present average earnings of the profession in Chicago is about $1,260; which is not the average salary of first-class salesmen.

We shall have to quote Dr. Crawford again, as he stands as an ex-professor, and has been twice president of the American Dental Association. Not long since he made remarks which do not exactly conform to those quoted above, but which bear out our views exactly. He said, in speaking on the subject of dental education: "The student ought to remain longer in college. His future occupation offers a barrier to all subsequent intellectual development." Why? "Because he is going to have the hardest work to make a living. The most of those that I know are poor."

Not enough dentists to keep the tartar off people's teeth, and yet the young dentist will have such a struggle to make a living, he will not develop mentally. 'Tis a sad fact that most of them don't grow intellectually, but are content to remain as they started in professional life.

When a condition exists, there must be a reason for its existence.—*The American Dental Weekly.*

ARTICLE X.

ON CERTAIN DIFFICULTIES OF DIAGNOSIS.

BY J. P. PARKINSON, M. D., M. R. C. P.,

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It is a frequent custom with medical men who are pressed for time, or not too well skilled in the physical signs of disease, to place too much reliance on the patient's account of his disease, and too little on those indications which he can elicit by examination; as an example of this error into which one may fall, I may quote the following case:

A patient came to see me some months ago in a state of great agitation; he complained of a severe cough, and stated he had two or three times expectorated a small quantity of blood, while the day previous he was attacked by a sharp pricking pain in the chest on drawing the breath.

At first sight these symptoms seem to warrant a diagnosis of phthisis, but, on examination, I noted that the temperature was quite normal, the chest showed no physical signs of disease, and on examination of the throat some congestion and signs of granular pharyngitis were evident. On questioning, I discovered that the patient had previously suffered from gout, and, in the absence of other causes, I judged this to be at the bottom of his disease, causing pharyngitis, from whence the blood had come. and a gouty neuralgia, or myalgia, to which the pain in the chest was due. I prescribed the usual purgatives, alkalies and colchicum, which were quickly followed by a complete cure. This description of pain in the chest, called, often, pleurodynia, is distinguished from simple pleurisy by the absence of friction sound, and by the temperature being normal, from that which may occur at the beginning of acute pneumonia, by the absence of dulness, fine rales or tubular breathing, and by the temperature being normal.

Pleurodynia also has to be distinguished from the pain which sometimes precèdes the appearance of herpes zoster; this can be done only by the exact localization of the latter pain to the cutaneous areas of an intercostal nerve, and to the fact that this pain is cutaneous, and not deep-seated, as is the pain of pleurodynia.

Again, pain may be referred to the extremity of certain intercostal nerves, which, due to the pressure or irritation of disease elsewhere—for example, caries of the dorsal vertebræ—may cause as its chief symptom, pain in the front of the chest, and there may be but little evidence of disease of the spine, still, by careful searching, one of the vertebral spines may be found to project unduly, or to be out of the general line or percussion, or the application of a hot sponge, may elicit tenderness not suspected before.

The pressure, too, of an aneurism of the descending aorta, or a tumor in the posterior mediastinum, may cause pain referred to the front of the chest; but a thorough examination may lead to the discovery of some dulness in the situation of the tumor, or one side of the chest may show deficiency of expansion owing to pressure on a bronchus, and these signs, though slight, may suffice to show that some deep-seated disease is at the bottom of the pain in the chest, which might otherwise be treated uselessly by local applications.

Again, the diagnosis of the early stages of phthisis may be of the greatest difficulty, and the early symptoms are frequently misleading. The patients often complain of symptoms of anemia, such as languor, shortness of breath on exertion, palpitation of the heart, etc., or of dyspetic symptoms, pain in the abdomen, and vomiting; or of hoarseness of voice, which may be due to a simple catarrhal laryngitis, which so often accompanies phthisis, or to actual tubercular disease of the larynx. Wandering chest pains may often also be an early symptom, or an attack of true pleurisy; this latter disease; in the abscence of other causes, such as injury, kidney disease, or rheumatism, etc., is very frequently of tubercular origin, and if it recurs, is almost certainly so.

Such symptoms, especially if combined with emaciation, should suggest a thorough examination of the chest, and the weight of the patient should be taken for future reference, as a steady decrease of weight shows sometimes the progress of disease when the physical signs are very obscure.

Examination of the chest may show that one side moves slightly less than the other, especially at the apex, or deficiency of expansion at both apices. The vocal fremitus may be excessive at one or other apex, showing that slight consolidation of the lung tissue is beginning; and it must be remembered that the right side of the chest normally moves slightly more than the left, and that on right vocal fermitus is often better felt than on the lefe side.

Both these signs may be absent, and then auscultation may reveal an irregular or jerkey, the so-called "cog-wheel" breathing, most marked in inspiration, though this type of breathing may also be heard in highly nervous, but otherwise healthy, patients.

Again, the breathing may have a bronchial character, that is, may be high-pitched than normal, with a high-pitched and prolonged expiratory sound; and this character, to be at all significant of consoli ation of the lung, must be marked in expiration, as well as in inspiration. The breath sound may be short and faint, showing that the entry of air to that part of the lung is deficient, or without any great change in the character of the breath-sounds, fine rales may be heard at the end of a deep inspiration; and before saying that these are absent, it should be seen that a deep breath be taken, as sometimes rales, unheard before, then become evident. These rales, to be definitely indicative of phthisis, should be unaltered by coughing.

The character of these rales is of importance, as those occurring in early phthisis are usually small-sounding and sharp in quality, often resembling chicks. Over a portion of a lung affected with phthisis, the vocal responance is generally louder (bronchophony), and the heart-sounds may be conducted with more than normal intensity.

Any of the above signs, if constant over the period of a week or two, will raise a strong presumption of active phthisis, especially if combined with some of the symptoms mentioned above, and a general loss of flesh and strength.

The evening temperature should always be taken, as well as that of the morning, as frequently fever is only present in the evening, while the temperature in the morning is normal.

It must be mentioned that bronchial breathing is normal in the interscapular region at the back of the chest, and is often heard at the right apex in front and behind in women, and also that the breath-sounds of children are usually harsher than those of adults.

Many cases of phthisis begin by an attack of pleurisy, and, therefore, in all cases of this disease, the apices of the lungs should be carefully examined for tubercular disease, both in front and behind, as sometimes in one and sometimes in the other position the signs are most evident. An apical pleurisy is almost certainly of tubercular origin.

In any case of doubt the sputum, however small its amount, should be examined for the tubercle bucillus. The presence of this micro-organism makes the diagnosis certain, but the fact that it is not discovered is of little significance, except the examination be several times repeated by an observer competent to decide.

The mode of staining the sputum and its examination may easily be learned by anyone accustomed to microscopic methods, and should be more generally used by medical men than it is at present. The value of this means of diagnosis may be illustrated by the case of a man who was attached to an African exploring party. On arrival in England he felt very unwell and went to a hospital. When admitted, he was found to have an intermittent type of fever, varying from 99 per cent. to 101 per cent. F. There appeared no marked disease in any organ, and the blood was tested for malarial germs without success. After some weeks it was noticed that he expectorated once or twice during the day, and on examination the tubercle bacillus was found in this. No obvious signs of disease had up to then been found in the lungs, but some weeks later these became evident, and the diagnosis of phthisis was confirmed.

In women, again, the early signs of phthisis are often confounded with those of simple anemia, as the patient may complain of symptoms which could well be the result of simple anemia. Hence, in every case of anemia the chest should be examined carefully, and any abnormal signs noted. It should also be insisted on, in the case especially of women and children, that a deep breath be taken during auscultation, as often a slight moist sound may then be heard at the end of inspiration, which otherwise would not be elicited. The diagnosis of phthisis in a patient who has much emphysema, may be very difficult by physical signs alone, as the resonance of the expanded lung may mask both any dulness that consolidation might give rise to, and also faint rales may be obscured by the emphysema, or by the bronchitis which so frequently accompanies this condition.

Again, if the signs of phthisis have been definitely made out, it does not follow that this is the whole of the morbid condition. In this, as in all other cases of disease, the urine should be tested for albumin or sugar, as the phthisis may be only a part of diabetes, or the kidneys may be affected by some tubercular process, or by the lung disease, so as to cause a very different prognosis to that which would be given if the urine were found to be normal.

The determination whether sugur be or be not present in the urine should always be done in one particular way: The proper amount of copper sulphate should be kept in solution in one bottle, and the caustic potash and potassium sodium tartrate in another, and only when required should then be mixed in a test tube. This should then be heated to boiling, and if any precipitate occur freshly prepared solutions should be used; then, when boiling, one or two drops of the urine should be added, and if much sugar be present, a copious yellow precipitate forms. If no precipitate occurs, the urine should be added equal in amount to that of the test solution, when on boiling, if sugar be present, the precipitate mentioned above will appear. There are certain fallacies, however, to be guarded against when this test is employed. First, frequently a yellowish cloud may appear when much urine is added to the alkaline test solution, which merely consists of phosphate precipitated owing to the effect of the alkali on the urine, but this cloud has not the bright yellow color of the true sugar precipitate.

Secondly, if much uric acid, hippuric acid or ceratinine be present, a very slight reduction may occur, even if there be no sugar in the urine.

Thirdly, after the administration of morphine, chloroform, chloral hydrate, butychloral, or camphor, a substance called glycuronic acid is found in the urine, and this gives exactly the same reaction with the copper solution as sugar. That the reduction is due to this cause is seen by the fact that glycuronic acid does not ferment with yeast as does sugar, and hence the fermentation test will distinguish between them.

This fermentation test can most simply be applied by filling completely a test tube with urine, and adding a small fragment of yeast, and inverting the test tube over a saucer filled with urine; then, after standing for some hours in a warm place, if sugar be present in the urine, it will be seen that an evolution of gas from the urine has displaced the upper part of that fluid in the test tube, and if the specific gravity of the urine be taken, it will be found to be less than before, owing to the fermentation of the sugar forming alcohol and carbonic acid gas.

The discovery of much sugar in the urine of a patient whose lungs show signs of phthisis, should suggest that the lung condition is secondary to the diabetes, and in this case the prognosis is much graver than if the lung disease be of primary tubercular origin.

In the examination of the urine for albumin, there are many possible fallacies to be avoided.

Two tests are most frequently employed, the cold nitric acid test, and the heating and acidulation test. The cold nitric acid test is best used by pouring about half an inch deep of nitric acid into a test tube, and then gently pouring in urine while the test tube is held in a slanting position; in this way the urine forms a layer separate from the nitric acid; if albumin be present, either at once, or in a minute or two, there will appear in the urine, just above the junction of the liquids, a white deposit of coagulated albumin. The fallacies of this test are the following: If the urine be concentrated, and contain an excess of urates, these will be precipitated as a cloud, which, however, appears at some distance above the nitric acid, and the application of a gentle heat will at once dissolve them, which will not happen to any precipitated albumin; again, the urine of persons taking copabia will, when treated as above, show a general cloud diffused evenly through it; this precipitate again is dissolved by heat; finally, in many urines, the addition of nitric acid gives rise, after standing for some time, to the deposit of lamellar crystals, which consist of nitrate of urea.

The test for albumin in the urine by heat is best done by half filling a test tube with urine, and, while holding it by the base, heating the upper part, when, if albumin be present, a cloud, or precipitate, will appear in the heated portion.

If the urine be turbid, and this turbidity does not disappear on heating, it must be filtered before testing for albumin.

Heat will frequently precipitate earthy phosphates, which form a cloud not to be distinguished from albumin by the eye, but this precipitate will at once dissolve on the addition of acetic or nitric acid, while that due to albumin will remain unaltered

Again, albumin may be present in urine and yet not be precipitated by heat. This occurs if the urine is alkaline, when, on heating, alkali albumin is formed, which is not coagulated by heat. To guard against this fallacy, if the urine be alkaline, it is necessary to add a drop or two of acetic acid previously to boiling, so as to render it weakly acid; but if the urine be too highly acid, albumin, if present in small quantity, may be converted, into acid albumin, which, also, is not precipitated by heat, hence the caution to add only a very small amount of acetic acid.

In any case, a clear urine is necessary for the heat test; if the urine be cloudy from urates, a gentle heat dissolves them; if from phosphates, the addition of acetic acid will make it clear, but if any other substance render it cloudy, the urine should be filtered.

The presence of albumin in the urine of a phthisical patient may be due to the following causes:

1. Simple congestion, in cases where the heart's action is hampered, and the abdominal organs are generally congested.

2. Lardaceous, or amyloid disease, which is a part of a general cachexia, occurring in cases of long-continued phthisis.

3. Tubercular disease of the kidney.

4. Acute or chronic nephritis, combined with phthisis.

In all the above conditions, naturally, the kidney disease increases the gravity of the case, and makes the prognosis worse than if no albuminuria was present.

The diagnosis of fluid within the chest is a point which frequently gives rise to much difficulty. The final decision may have to depend on an exploratory puncture, but before this is done it is as well to have a fairly reasonable idea that fluid is present.

The important points are, firstly, the complete abolition of vocal fremitus. If the patient be a man with a good voice, there is no other condition under which this fremitus is absent, except occlusion of the bronchus, or pneumothorax. It may, however, be diminished when the pleura is simply thickened by fibrous tissue, but often when women or children are the patients, vocal fremitus can not be obtained over any part of the chest.

The second important physical sign of fluid is absolute dulness to percussion, with a feeling of much increased resistance to the percussing finger. There is no other condition which gives such intense dulness as fluid in the chest.

The third important sign of fluid, if it exist in any quantity, is the displacement of the heart to the opposite side of the chest. If the fluid be on the right side of the chest, the heart's apex is displaced outside the nipple line, and may even be seen and felt to beat in the left axilla; while, if the fluid be on the left side of the chest, the heart is displaced to the right, and the heart's dulness extends beyond the right edge of the sternum. In this case the apex beat is often not visible or palpable, as it may be hidden by the sternum, but the alteration of the heart's dulness, and the fact that the heart sounds are heard more to the right than usual, are sufficient for diagnosis.

The above are the physical signs upon which most reliance may be placed for a diagnosis of fluid within the chest. It is true that a thickened pleura, due to old pleurisy, will give diminution of vocal fremitus and more or less dulness, but the heart if displaced at all, will be pulled toward the side of the disease, and not pushed away from it; and the chest, instead of being more or less bulged on the diseased side, will be seen to be retracted. The breath sounds over a pleural effusion are usually weak, or altogether lost, but sometimes, especially if the stethoscope be placed near the spinal column, the breat sounds may be loud and bronchial, or even tubular. This has sometimes led to an incorrect diagnosis, not sufficient weight having been placed on the physical signs before mentioned.

The peculiar nasal or bleating sound, called ægophony —which is often heard about the angle of the scapula when pleural effusion is present—is often much relied on for the diagnosis of the presence of fluid in the pleura. It is undoubtedly very frequently present, but its absence does not at all militate against fluid being present. It is now generally the rule, except very much fever be present, when fluid is suspected, to puncture the chest with an exploring syringe, and to draw off a specimen of the fluid, and this plan is much to be commended. Certain precautions must, however, be taken. The syringe must be inserted into a part of the chest which is undoubtedly dull on percussion, and the syringe must be in good condition and the needle patent. These observations may seem to be unnecessary, but I have seen cases where it was said fluid was not present, owing to its having been overlooked. Then the needle must be inserted sufficiently deeply, as sometimes a flake of lymph or a mass of phoid tissue may be thick enough to prevent the needle reaching the fluid, or occasionally a needle previously carbolized coagulates the serum in its lumen, and so prevents the fluid entering the syringe. Again, if the fluid be pus a needle with a sufficiently large lumen must be employed, otherwise thick pus will not pass through.

The determining whether fluid in the chest be serous, or purulent, is difficult, often impossible, before aspiration; the chief points to be relied on are the following: The long continuance of an effusion suggests that it may be purulent, though in some cases fluid know to have been in the chest for many months has proved serious. If in a case of effusion which has lasted some weeks, the temperature be raised, it is probable the fluid is purulent, but the converse is not the case, as often pints of pus are removed from a pleura of a patient whose temperature has not been raised above the normal limit. Fluid which is effused in the course of an acute pneumonia, or some of the acute specifics, notably typhoid fever, is often purulent. Again, fluid in the pleura complicating Bright's disease, or other morbid blood states, is generally purulent, as often is the fluid arising during the course of phthisis.

Edema of the chest wall over the fluid is strongly in favor of empyema, and so is the fact that the fluid is pointing under the skin from between the ribs. Empyema is said to transmit the voice sounds better than serous pleurisy, but this can not be relied upon. Perhaps the best indications that the fluid is purulent is when the patient becomes sallow and anemic, and the finger-ends become clubbed, but these symptoms only arise when the fluid has existed some time, and an earlier diagnosis is much to be desired; hence, in any doubtful case the introduction of an exploring needle of sufficient size is of the greatest value.

This is especially the case in those small empyemata which are so frequent, and so difficult of detection in young children, as the only physical sign they often give is local dulness, while the child, if untreated, goes from bad to worse, and may finally die if nothing curative be attempted.

The bringing up of blood by the mouth is very frequently difficult to ascertain the cause of; it may come from the lungs, or stomach, or from the nose, mouth, fauces, larynx, etc. The characteristics of blood from the lungs and stomach are given in tabular form from my work on Clinical Diagnosis.:*

Hemoptysis.	*Hematemesis.*
Generally a history of cough.	Often previous nausea or indigestion.
Blood is coughed up.	Blood is vomited.
Blood is bright, and often frothy.	Blood often dark or clotted, and not usually frothy.
Blood may be mixed with sputum.	Blood may be mixed with food.
Blood always alkaline.	Blood generally acid.
Sputum is streaked with blood the nex day.	No after-expectoration of blood.
No blood passed per rectum, *except* some *has* been swallowed.	May be followed by melena.

There are, however, a large number of cases in which blood, generally in small amount, is brought up, which does not come under the above heads; for example a patient may find a slight blood stain on the pillow in the morning; this frequently is due to a slight bleeding of the gums, which is not uncommon in anemic patients, and has no serious significance; an inspection of the gums may show a slight abrasion, or bleeding point, or a speck of coagulated blood. If expectorated, this blood from the mouth is usually thin and diluted with saliva.

Hemoptysis in children is most frequently due to adenoid vegetations in the pharynx, which cause also nasal disease, snoring, mouth breathing, and a tendency to pharyngeal and nasal catarrh; these growths are easily felt by passing the guarded finger behind the soft palate, when a soft, jelly-like mass will be felt, and the finger, when withdrawn, will be found to be generally blood-stained.

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*Clinical Diagnosis, by J. P. Parkinson, M. D., Balliere, Tindall & Cox, London, Eng.

Hemoptysis is sometimes due to bleeding from the back of the nose in cases of inflammation of its mucous membrane; in this case the blood is usually dark and coagulated, and in pellets often mixed with dried nasal secretion.

Blood may also come from the pharynx, and in no case should it be decided that blood comes from the lungs without an examination of the pharynx, in which there may be discovered the point from which the blood comes. Blood is often expectorated, due to the bursting of a pharyngeal blood vessel in a patient suffering from pharyngitis.

Finally, blood may come from the larynx, and the diagnosis of this is, perhaps, the most difficult of all, as the blood may have all the characters of blood from the lungs; however, some hoarseness, or other laryngeal symptom may draw attention to that organ, and a laryngoscopic examination may show an abrasion or ulcer which has caused the symptom.

Cough, again, is a symptom which is often wrongly put down to chest disease; this error is specially frequent in children, as in them about seventy-five per cent of the coughs are due to either adenoid vegetations, enlarged tonsils, or pharyngitis; in these cases the cough is, as a rule, worse at night, and on auscultation of the chest, as a rule, a few bronchi will be heard; but these moist sounds are not the cause of the cough, and treatment by carbonate of ammonia and ipecacuanna will certainly fail, while treatment directed to the local throat condition will as certainly cure. Elongation of the uvula also is a frequent cause of night cough, which will certainly be overlooked without the throat be examined.

Other less frequent causes of cough, are gastric irritation, the presence of wax or other foreign body in the external auditory meatus, and occasionally, it is said, cough may be due to dental causes, or other cause of irritation of the dental nerves.

Enough has been said to show how important it is not to take symptoms on their own merits alone, but to qualify them by a thorough examinination of the patient, for it is very common for a patient to unconsciously exaggerate any symptoms he experiences, and if leading questions be put by the medical man, to reply in the manner which may be suggested by the doctor. Questions must, of course, be asked, but they should be put, if possible, in a form which does not suggest any simple affirmation or denial on the part of the patient, but rather should attempt to elicit the patient's own more complete description of his troubles.—*Medical Brief.*

ARTICLE XI.

STIMULANTS AND SEDATIVES.

To use drugs intelligently, the physician needs to be a close observer and a good reasoner. In the human system exactly opposite causes sometimes produce very similar symptoms, and a medicine which will remedy one cause excites the other. In such cases careful inquiry into the patient's daily life, and a study of his temperament and idiosyncrasies, will save much experimenting on the part of the Doctor and impatience and disgust in the case of the patient.

For example, the nervous system may suffer from over or insufficient use. Where the trouble is abuse, the nervous system is hyperemic, very irritable, its nutrition is unstable, there is excessive waste on slight effort, which necessitates constant efforts at repair. In such a case, to give nerve stimulants such as strychnia, is suicidal. What is needed is a combination of nerve sedative and circulatory stimulant. The first lessons nervous excitability, the second brings fresh blood to repair waste and carry off broken down tissue elements. A combination which works exceedingly well is equal parts of Peacock's Bromides and Celerina, in drachm doses several times a day. Another good mixture for temporary use is Papine and aromatic spirits of ammonia, ten drops of the former to thirty of the latter.

In cases where the nervous system requires stimulation, we find torpidity, lethargy. The individual, while apparently in good condition, eating and sleeping well, looks, moves and feels as though he had been drugged. Has no ambition; content to sit around and vegetate. In these cases Celerina alone, in teaspoonful doses every three or four hours, will brighten up these patients wonderfully.

A physician remarked to the Editor, recently, that Fellows' Syr. Hypophos. Comp. was a very good remedy, but he could not always tell whether it was indicated in a given case or not. That sometimes it did great good, but occasionally seemed to make the patient worse. This is because it is a tonic to the nervous system, and where the latter has already been stimulated by over-work to the point of exhaustion, sedation and recuperation must precede the use of tonics.

What is true of the nervous system applies equally to the digestive system, the genita-urinary system, etc. It would be a great mistake to treat a stomach in open, angry revolt, rejecting everything put into it, and pouring forth quantities of perverted secretions as we would a lax, sluggish, atonic organ, coated with mucus. So, too, it would be foolish to give a renal stimulant like buchu to a kidney badly congested, secreting blood and pus, but the indolent, catarrhal kidney might require stimulation. And right here we desire to remark the unwisdom of giving alkalies to persons suffering from Bright's disease, diabetes, malaria, uric acid diathesis, or any other condition in which the skin is inactive. They increase the renal congestion, and make the patient worse.

To recognize widely varying pathology, often masked by similar symptoms, needs much insight and thought on the part of the Doctor. He must study indications carefully, see that his drugs are pure, and that no substitution is practiced upon him, in order to avoid all possible sources of error.—*Medical Brief.*

ARTICLE XII.

SAVING AN OLD TOOTH.

BY ERNEST M'CAFFEY.

The doctor stretched my mouth open until he could see my heart beat. Then he said, cautiously, "I think we can save that tooth." Running a long, inquisitive wire into the tooth to the depth of about sixteen inches, he stirred up something known as a "nerve." In response to my fervent yell he asked, "Does that hurt?" I wiped tears out of my eyes and simply said "Yes." Then he got some zahnarzt crowbars and pried here and there at the tooth, occasionally waking up that cussed nerve, which had been growling ever since at its unceremonious handling. Then he said: "We will have to kill the nerve first, and fill the tooth afterwards."

"How long will that take?" I asked anxiously.

"On, you can't tell about that," he replied; you can have it pulled if you prefer it." he added. I went to the glass and smiled at myself. It was as I feared. If that tooth was yanked out, my smile was ruined.

There is nothing so unpleasant as a foreshortened smile. The absence of the tooth at either end gives it a wolfish character. A tooth out of the center of a smile simply wrecks it. No, I could not afford to have that tooth pulled.

Stimulated then by the strongest ingredient in the mal-character—viz., vanity—I resolved to take my medicine, and so the pact was made.

I began to make regular trips to his office, and soon became inured to scenes that at first chilled the glad blood in my veins and caused the soft and insignificant goose pimples to start from my flesh as a trumpet call. People with a strained expression of countenance met there, and the doctor's little room, which I had mentally named the chamber of horrors, re-echoed with groans, yells, and imprecations. And yet he was a gentle-hearted man. He did not revel in those pandemoniums of whoops and sobs, but the stern necessities of dentistry compelled them.

His instruments of torture, called by courtesy dental tools, were many and varied. He was very skillful in his profession, and when he took a job, he did it in first class style. The dental tools are simply copies in miniature of articles used in the Spanish Inquisition and on refractory prisoners in the Tower of London. There are monkey-wrenches, raspers, files, gouges, cleavers, picks, squeezers, drills, daggers, little crowbars, punchers, chisels, pinchers, and long wire feelers with prehensile, palpitating tips that can reach down through the roots of a throbbing tooth and fish up a yell from your inner consciousness. When a painstaking dentist cannot hurt you with the cold steel, he lights a small alcohol lamp, and heats one of his little spades red hot, and hovers over you with an expectant smile. Then he deftly inserts this into your mouth, and when you give a yell, he says, "Does that hurt ?"

Well, the first thing to do was to kill the nerve. The nerve is a long, starved angle-worm growth that starts in the tooth somewhere and goes down and up with three distinct tentacles or feelers. One of these connects with your brain, one with your heart, and the other with your soul. Every time a nerve is touched an electric shock goes to each of these terminal points, and you feel as if you had been shot, stabbed, and burned with a hot iron at one and the same time.

The doctor toyed with this nerve of mine for some weeks. Whenever the combination was made I used to kick out with one foot and cry "Ow !" or grab his hand and say, appealingly, 'Oh, don't!" Then he would say, "We won't hurt you."

Sometimes he would lull me into a fancied security, and I would be counting three hundred, or saying to myself, "Even this will pass away," when all of a sudden four thousand rattle snakes would dart their venom into me simultaneously, a hundred mules would kick me, a score of bumblebees would sock their stingers into me, and the world would come to an end. Then I would know that he had stepped on the nerve with the "teaser." The "teaser" is the boss "feeler," being fine as a horsehair and of the most undoubted yell-producing power.

After a long while the nerve capitulated. I had lost eleven pounds in the process, but a great gain had been made. The tooth was now as tender as a mush-and-milk poultice, and even to tickle it with an ostrich tip would produce exquisite agony. He used to soothe it from time to time with various lotions, and finally he began to quarry out the dead bone a little. This was gruesome work, for there were tender places all over the tooth, as thick as spots on a leopard, and every time he jammed a chisel into one of them I almost fainted. I was kept in a continuous cold sweat for weeks, thinking about it before I went, going through with it while I was at the office, and thinking about it after I had left.

After he had amused himself by digging and blasting out a lot of little galleries in the upper part of the tooth, he began to "treat" the root apertures.

This is a most ingenious and refined cruelty, and by some dentists is preferred even to nerve-killing. The process is to first feel around with the "teaser" on the sensitive roots; next to put a little cotton dipped in carbolic or nitric acid, creosote or turpentine around the "teaser," and stick it away down into the same place. This hurts powerfully. It cleanses the roots of impurities, though. A lighted match would be less painful, but the aperture is not large enough to admit one. After this some cotton filling is stuffed in, and you are told to come back in three days. That night you awake at twelve o'clock with "your soul in arms and eager for the fray." You dig out all the filling and pace up and down the room, saying at intervals, "Oh, gosh! why didn't I have it pulled?"

Then you go back and the treatment is renewed. The doctor varied the upper filling by putting in hard rubber filling after a while. This is put in soft and hot, and hardens when it gets cold.

When you wake up with this hurting you at night, you can't get it out. A red-hot hairpin may get some of it out, but you are liable to glance off and get your gums into the sear and yellow. So you generally recoup by taking the Lord's name, as some say, in vain, but it soothes you, anyway.

When the roots are ready to fill, a gladsome joy pervades your entire system. The birds sing, the skies are bright, roses bloom, men and women are better, the whole world has changed in the twinkling of an eye. The day the roots are filled you go home and kiss your mother, and eat your supper on both sides of your mouth. For, mark you, when a tooth is being filled, the jaw it adorns is practically sidetracked until the crucifixion is over.

The last scene in the drama is when the doctor put in the top filling. The roots had already been plugged with a red putty which had hardened into a regular tooth cement. I lay back in the chair and the tap, tap of the hammer and punch sounded as melodious as Joaquin Miller's line of "A woodpecker pounded a pine top shell."

I was wrapped in a dream of delicious joy. Not like some of my acquaintances would I be forced to launch myself into society with a fragmentary misfit smile. No, indeed! And when the whole thing was through, I shook the dock's hand, and he told me he had never meant all along to so kill me by inches, but that dentistry was dentistry.

Then I went to the glass and smiled.—*Chicago Herald.*

ARTICLE XIII.

APPENDICITIS.

BY C. ALVIN STRASBURG, M. D., CRIDERSVILLE, O.

Only a short time since, I was called to treat my second case of appendicitis. The patient was a man of more than fifty years. Found he had been vomiting. Pulse ninety six; temperature 102°. Bowels swollen, and very tender. Urine brown. Bowels had been moving every day. Tumor in right iliac region, and a slight, stinging pain occasionally also there. Extreme rigors.

What shall I Do? was my query. Shall I operate? No! seemed to echo to me in such a way that I heeded its advice. From the rigors present it was plain that pus had already formed, and an operation would be equal to suicide for my patient. I used enemas of cool water every two hours, and upon the third administration of the enema I was pleased to see the pus follow.

The appendix had opened into the cecum, and its contents were evacuated. The pain then became less severe, and after a few hours another discharge of pus followed enema, and the rigors ceased. I advised enemas three times daily for a few days. Patient made a splendid recovery.

His internal treatment was:

℞	Ext. Aconiti fl.	10 drops.
	Ext. Digitalis fl.	15 drops.
	Glycerini	2 ounces.
	Aquæ Dest.	4 ounces.

M. Sig.: Teaspoonful every hour.

Upon a former occasion I used, in a more recent attack of appendicitis, equal parts of glycerine and castor oil, with very gratifying results. I should prefer this, or other simple methods, to operating, as it does not necessitate the danger of losing a surgeon's sponge, or spectacles, in the abdominal cavity. These, of course, would be hard to obtain should the patient recover.—*Medical Brief.*

Monthly Summary.

THE CARE OF VULCANIZERS.—In spite of the fact that the vulcanizers sold by the reliable manufacturers are submitted to severe tests by hydrostatic pressure—some of them to a pressure of 900 pounds to the inch—explosions have not been unfrequent, generally due to the ignorance of the assistants who watch them, or pretend to watch them, during the process of vulcanization, and not a little to the carelessness of the dentists themselves, who fail to impress upon the students that these little steam boilers require as much attention as boilers of greater capacity. In the first place it does not pay to use cheap vulcanizers any more than cheap German tools and instruments, or the cheaper grades of artificial teeth. In the next place, one should familiarize himself with every part of the machine; realize the importance of keeping it and its belongings clean, and adhere strictly to the rules laid down by the manufacturers. Where thermometers are used, it ought not to be forgotten that too rapid and too great heat at starting, especially if the flame is allowed to surround and reach the top cover, may deceive, and that the thermometer at 320° may really indicate only the temperature of the cover, and not that of the flask inside. The safety disk used on some modern vulcanizers should not be forced on too tight, as this weakens them. The boiler should on no account ever be perfectly full of water; at least one inch or more of steam room should be left above the water. When the heat is first applied, the valve for the escape of steam should be opened for a few minutes to allow a free escape of steam, as this leaves in the boiler, after the valve is closed, an atmosphere of pure steam, and precaution should be taken not to use any more force in closing the valve than is necessary to make it steam-tight. We are warned, too, not to daub too much black lead or soapstone powder about the packing. In fact, it is better never to use any if it can be avoided. Oil should never be used, as it rots the rubber packing, and may become gummy and cement the core to the pot, to the damage of the rubber packing.

Too frequent use of the black lead and soapstone wears away the screw thread. In heating up, the flame should not be larger than will cover the bottom of the boiler. If students can have these simple instructions put into their brains, it may save some of them from having their heads blown off. If they will not attend to them, they deserve to be killed. Thermometers, in the cities, ought to be relegated to the list of things which are obsolete in the laboratory. Proper gas regulators and steam gauges should be used, and dentists owe it to themselves and their students not to neglect every proper precaution in the use of these laboratory demons.—*Indiana Dental Journal.*

MAKING PARTIAL DENTURES.—Impressions, either for full or partial duntures, are better obtained with plaster of Paris. Where difficulty of removal is foreseen, I insert a rim of compound which takes the place of the plaster around the teeth. Having run my model and articulated it (when necessary), I very slightly and smoothly trim the plaster around necks of the teeth to insure a close fit. A snug fitting partial plate will not cause the teeth to decay as one does which works closely against them.

With the cast in proper shape we mold a plate on it and mount with teeth of the proper shade, size and shape, and properly set for correct articulation and expression.

I next take some dissolved black rubber of creamy consistency, and smear it over the cast, being careful to rub it well into every part over which I wish the plate to fit. Then gently heat a sheet of rubber and press it evenly into place, and with a hot, sharp knife, trim around the teeth, working the rubber well in between them. The portions of rubber that are to receive the teeth, must, of course, be made thicker; then heat the teeth over the spirit lamp, and press into place.

After the teeth are in proper position, trim with a hot knife all the excess of rubber, putting the plate in as near the desired shape as possible, then flash and vulcanize.

In ordinary cases, from the time your cast is ready till your plate is prepared for the flask does not consume over twenty minutes. Could that be done by the old process of waxing?

Thus you have a saving of time and no waste of rubber, for you are always sure of getting in the proper amount of rubber, and run no risk of getting in too much or too little. The plate is just the desired thickness, and no excess to be scraped away, in fact, I have no scraping to do at all, merely sandpapering the plate and polishing it. Besides this the vulcanite is tougher and better than when thick plates are made. It fits perfectly around the natural teeth without any filing. How many of us have found that in filing a partial plate, to make it fit around the natural teeth, we met a difficulty to know just how far to go that the fit might be perfect? By this method such difficulty is avoided.

By this plan there is no danger of breaking the cast or marring the work in any way.

My reason for using dissolved black rubber is perhaps only a whim, but I like to line my rubber plates with black.

Please do not raise the objection that without the old-style pressure the rubber will not be forced into every part, my experience has taught me differently.

I have tried this method for two years, and will you allow me to state a fact? I have never had one failure since adopting it.—*Dr. D. A. Anderson, in Dental Brief.*

THE NUISANCE of tobacco slobber and smoke is expected in the nasty quarters of the abandoned refuge of humanity in our worst cities, but it ought to be a surprise, and is a shame and a disgrace, to see it in our dental colleges! How can we expect gentlemanly deportment, refined manners, chaste language, or even clear intellect, where there is such filth? And how can we look for a clean profession to come from such low morals and lax discipline in its students? —*Dental Brief.*

FOR BURNS.—Of all the various remedies recommended for burns, nothing has succeeded so well as bicarbonate of soda, applied wet. It relieves the pain almost instantly and in most cases prevents a blister.

SETTING BRIDGES.—I apply the dam where practicable and coat the pier teeth or roots with nitrate of silver. This may be done by direct application or by cataphoresis. There are three points of advantage in this method :

1st. If the tooth is a live tooth, the sensitive condition is obviated, especially if the cement is slightly acid in reaction.

2d. An oxyphosphate cement will adhere to this surface more surely than to the tooth.

3d. In case any cement washes away at any time, or in case a band does not cover the root entirely, the nitrate of silver coating protects it thoroughly.

I might add a fourth reason, and that is that the tooth would be in an aseptic condition and would have a tendency to render the cement so, but that is conjecture, as I have never removed a bridge that has been set under these conditions.—A. Jameson, *Review.*

BE CLEANLY.—Every few days one can hear remarks from patients about some dentist using soiled towels, napkins or rubber dam.

I cannot understand why anyone wants to do it. If they can not make dentistry profitable enough so they can use clean towels, napkins and rubber dam, for the love of their brothers, if not for the profession, get out of it.

Success in dentistry depends largely upon one's ability, combined with cleanliness—i. e., spotless napkins on both tray and headrest, with towels and operating coats from same drawer—one's success is assured.—E. H. L., in *Dental Weekly.*

DOCTORS OF MEDICINE who undertake the care of the sick are subject to punishment for malpractice, or for professing qualifications which they do not possess. There is an organized system, however incompletely it succeeds, for the protection of the public against medical incompetents and imposters. But there seems to be no recognized method of ascertaining the competence of a Christian science healer, nor anything to hinder any crank from hanging out a Christian science sign and assuming responsibility for the gravest diseases.—*Life.*

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ARTICLE I.

ANTISEPTICS AND GERMICIDES IN DENTISTRY.

BY G. S. MARTIN, D. D. S., L. D. S., TORONTO JUNCTION, ONT.

Awarded fourth prize (40.00) in "Borolyptol" prize Competition.

It has been said by some one that it is therapeutics that makes dentistry a profession. In no other branch of therapeutics is the dentist so interested as in that given as the subject of this essay: "Antiseptics and Germicides." These terms are commonly used without any distinction being made between them, even writers in our journals and text-books failing often to make any difference.

An antiseptic, as I understand the term, is an agent having the property of preserving organic matter from fermentative changes. A germicide, on the other hand, is an agent that destroys micro-organisms or disease germs. For the most part dentists use germicidal medicaments very much oftener than they do antiseptics, because it is their province to deal with pathological conditions. When a practitioner talks of introducing an antiseptic into an abscess or a putrescent pulp, he generally means a germicide. When he bathes his instruments in a solution it is for the purpose of destroying any lurking germs of disease; and when he cleanses his cuspidore it should be with a germicidal disinfectant. This careless way of speaking is all too common among members of our profession and is very much to be deplored.

In a consideration of the agents at our command I would place first on the list, soap and water, being convinced that clean hands, towel, clothes and instruments are the first essentials to aseptic dentistry. The dentist who neglects cleanliness in his personal habits is not likely to value highly the more specific antiseptics, or to obtain desired results when he does use them. The observing patient is not likely to give a dentist credit for aseptic operations whose finger nails are not even mechanically clean. Dr. Taft has said that a thorough sterilization of instruments may be accomplished by the use of soap and water.

Heat is also one of the most useful of germicides, as, for example, in the cleansing of instruments by a bath in boiling water or oil.

Looking at the list of drugs which are avilable as antiseptics and germicides, we are reminded of the words of the wise king of Israel, regarding the making of books, " there is no end." Probably no other problem so absorbs the best thought of our profession at this one, involving, as it does, the treatment of alveolar abscess, root-canals, pyorrhœa, etc., the greatest trials of a dentist's life. Almost every journal we pick up describes some new or old preparation claimed by some enthusiast to be the ideal antiseptic. A recent writer on pyorrhœa alveolaris counted, if I remember rightly, something over one hundred different remedies for that bugbear of dentistry

In a paper so limited as this, it will be necessary to apply the principle of exclusion to arrive definitely at the drugs we consider permissible. An ideal antiseptic cr germicide should not be escarotic, coagulant, toxic or odorous; should not stain the tissues to which it is applied, and should be possessed of the greatest possible germ destroying power.

On consideration, in the light of these specifications, a great many of the old time favorites will be found wanting in one or more points. For example, such drugs as iodoform and creosote, with their terribly persistent odors are scarcely to be tolerated in a modern dental office. The operating room possesses terrors enough for the delicately organized patient, without the odor of such drugs.

Some of these otherwise desirable medicaments are to be avoided on account of their tendency to stain the tissues; as, for example, iodine or oil of cinnamon in the canal of a prominent tooth will cause a stain very awkward to deal with.

While the question of coagulants and non-coagulants has been a much vexed one during the past year, I am inclined to believe that these agents should preferably be non-coagulant.

Carbolic acid is, perhaps, one of the most common drugs to be found in the average dental office. Pure, it is reliable when applied to an ulcerated surface, or in a cavity before filling a tooth of poor quality. Diluted with water or glycerine, it is an efficient wash in cases of fetid breath from any local cause, such as after extensive extraction. Used one part in twenty of water, it is a reliable bath for instruments. The main objections to its use in the mouth are its odor and its caustic action. The odor may be disguised by the use of oil of cloves.

Carbolic acid, 51 parts, combined with camphor gum, 49 parts, by rubbing in a mortar will give campho-phenique, a remedy which stands to-day one of the most useful in the dentist's cabinet. It is one of the best dressings for root canals, abscesses, etc., and will prevent soreness of separating teeth with cotton. In fact, it has so many uses as to call forth from Professor Flagg, of Philadelphia, the statement that it is "the most remarkable medicament which has ever been offered in connection with dental therapeutics."

Boric acid is an antiseptic possessing very great merit in diseased conditions of the mucous membrane, and after the extraction of a number of teeth. A combination of borax and boric acid, to which some one has given the name boracine, is not caustic, toxic, or irritating, and is tasteless and odorless. A 16 per cent. solution in water has proved excellent in treating abscess of the antrum.

The old-time favorite creosote has, in my practice, given place to less pungent drugs. The only place I ever use it is in combination with tannic acid in cases where I cannot remove all the fibres of a pulp, and even here guiacol is to to be preferred.

The essential oils are valuable where stronger and more irritating agents are not necessary, and because their action is more enduring than watery forms of antiseptics. The most commonly used are cloves, cajeput, cinnamon, eucalyptol and wintergreen.

Bichlorid of mercury is, in spite of the sneers of the men who call it "beg-bug poison," still, perhaps, without a peer as a germicide. The offensive smell may be overcome by the use of a little rosewater. Use 1 part in 1,000 parts of water; it is the best bath for instruments that can be used. Dr. W. D. Miller, after his experiments, placed it at two hundred times stronger than pure carbolic acid, and advises its use even in 2 per cent. solution in cavities before filling. Combined with peroxide of hydrogen its use is indicated in abscess and pyorrhœa. The objections urged against the bichlorid are its poisonous nature, its smell and its tendency to change chemically. The dilute form in which it is used should not, however, result in any harm, and if prepared with ammonia chloride a solution may be made at any time required.

Thymol is a favorite subsitute for creosote and carbolic acid, having, according to most authorities, equal power as an antiseptic without the unpleasant smell. Combined with glycerol it makes a most effective treatment for putrescent conditions of pulps or in any suppurating condition found in the mouth.

One of the most valuable remedies in dental medicine is hydrogen peroxid. Apart from any chemical action on diseased tissues, its purely mechanical services in cleansing by effervesence in contact with pus is of great value to the dentist. Professor Miller places it next to bichlorid in the list of antiseptics. One great point in its favor is the fact that it may be used without fear, as it is harmles to healthy tissues. It should not be injected into an abscess cavity from which there is not plenty of room for the escape of the gases evolved.

Lately, in the treatment of putrescent conditions I have pinned my faith to peroxide of sodium. Dr. Kirk says of this article: "Sodium peroxid is the chemical analogy of the well-known hydrogen peroxid, with several advantages. It is a white solid, strongly alkaline and caustic. It is easily maintained by keeping it from the air, and the solution may be made at any time. It contains thirteen times as much available oxygen as the H_2O of commerce, which can be prepared from it for immediate use by adding to it any dilute acid in proper proportion.

It is, of course, impossible to do more than touch briefly on these agents, and I have selected only those which I use daily in my practice, wishing to make my paper as practical as possible.—*Dominion Dental Journal.*

ARTICLE II.

FOUR CLASSES OF DENTISTS.

By analysis it may be discovered that instead of two classes of dentists, as commonly supposed, Professional men and Quacks, there are already four, viz.: The true professional man; the Quack Professional; the Professional Quack, and the Quack.

The true professional man, in the highest and noblest sense of the words, is a *rara avis.* He begins practice just as the true minister of the gospel takes up preaching. He is prompted by a love of his work, and a love for his fellow-man. That he earns a living by the fees which he obtains, in no sense detracts from his attitude of being a missionary. He must live, that he may continue his mission. At times he receives high fees. Indeed such men receive the very highest fees, for the people are not all fools, and merit will eventually be recognized, and its reward cheerfully given. But the professional man, while exacting large fees from the rich, takes smaller ones from the less wealthy, and perhaps nothing at all from the needy. But even in his treatment of the very rich, he acts in a professional manner. He has in his own mind a fixed valuation for the service rendered. If the patron can afford this maximum sum, it is demanded. But if the next applicant for a similar service should own ten millions instead of one, the fee would be no greater. When a patient is entrusted to his care, the thought uppermost is not, "How much can I make out of this patient," but, rather, "How much can I accomplish; how much comfort can I afford to this sufferer?" In all services rendered the highest standard is ever before him. Whatever method promises the most lasting benefit he pursues without regard to time, money, or personal convenience. Many men fill teeth with amalgam, and preach the great advantage of using this material in preference to gold, who adopt such a course from laziness, and they write their articles to quiet a troublesome conscience, like the coward in the dark, who held one of his hands with the other trying to believe that he was not alone. Such a man is not truly professional.

The true professional man, then, is that man who is especially adapted to all the demands of his calling, both moral and mental. He has ever prominent in his mind the best interests of his patient, of his fellow practitioners, and of his profession which, by every act, he endeavors to lift to a higher plane in the esteem of the community. He conducts himself at all time so that his patrons place themselves, their wives and daughters, in his care with confidence in his integrity, and faith in his skill.

In New York City there resides one dentist who represents the highest type of the professional man.

Among those who claim to be professional men will be found men who are professional in varying degrees, until at the opposite extreme we find the quack professional. The quack professional, is like the crow who daubed himself with white paint and flocked with the geese, that the farmer might not suspect that he had one eye on the growing corn. This man is in dentistry for what there is in it. He poses with the professional men because perhaps by education and social position he naturally desires a clientele among the higher classes. He has no wish to work for the poor. It is the purse of the millionaire which is his constant aim. Such a man recently told a young man: " You cannot afford to have your teeth put in order." In desperation the young man sought advice elsewhere and cheerfully paid two hundred dollars to the gentleman who saved his teeth. Another boasted in a dental society meeting that he was " Not in dentistry for the good of his health," and the applause which greeted the remark proved that there were many present who had no very high estimate of professional rectitude.

While posing as a true professional man, the quack professional is his direct opposite in the matter of advertising. He does not advertise in the public prints. He is too shrewd for that. He knows the Code, and is very careful never to overstep the bounds. But one may advertise in many ways, not specially interdicted by the Code of Ethics. This man, unlike the true professional, is always *bragging*. He never losses an opportunity to explain how much greater he is than his fellows; how much more skillful; how many discoveries he has made; how many methods devised; how many instruments invented; and in short how very much indebted to him is all the rest of the dental world.

He also understands how to use printer's ink. He gets printed advertisements without paying for them. The chief object of advertising is to increase business. Consequently any use of the printer's art which accomplishes this end is advertising, however cleverly concealed. Indeed in these days, when advertising has grown to be a special study, the concealment of the advertisement is supposed to be the highest art. So our quack professional; our crow flocking with the geese who do not observe the black feathers beneath the white coat of paint, usually pursues some specialty, or pretends to do so; generally he practices everything, "from fillings to false teeth," but announces that he is especially successful in one line or practice. He writes many learned theses, some of which may be actually valuable additions to science, which fact adds to rather than detracts from their value as advertisements. His paper is usually read before a dental society, at which the author has a fine opportunity to pose as the special disciple of the methods advocated; next it appears in the most widely read journal. Would it not seem that this is efficient? It is not, as viewed from the standpoint of the quack professional. He is not yet sure that it has reached those places where it will do the most good; therefore he orders one or two thousand reprints, and these are industriously distributed over that field from which he garners his corn. Of course it is not intended here to state that all men who distribute reprints, are of this class. Many do this, as they do other work, without thought of self. But there is a little sign by which the pamphlet of the quack professional can always be detected. At the end of the last page (if not on the first page of the cover) appears his office address. He is not willing that the reader should have any difficulty in finding him. When next you receive a reprint, bearing this little ear mark, think of the pamphlet as white paint and look for the crow.

The professional quack is a miserable sort of fellow. He takes a notion tha he would like to be a dentist. He has little or no education, but in these days that is no obstacle, providing he has a couple of hundred of dollars. Any dental college in the United States will accept him as a student (*vide* proceedings National Association of Dental Faculties). He worries along through college to the examination period, and this he passes, because he wears long white cuffs, and knows how to write a fine legible hand with a well pointed pencil. So he gets through and is awarded a diploma. He does not send that pair of cuffs to the laundry, but uses them at a State Board examination which he passes with the same facility, and with the same lack of knowledge as when going through college. Thus he obtains his license. The college and the State Board have done all that they could for him; they have launched him. But thrown upon his own resources he finds that he has none. So one day his room rent is due, and his lunch ticket is punched full of holes, and if he ever heard any lecture on the subject of upholding the dignity of his profession, or if he ever made any promise to do so, he forgets it all. He hires himself to a quack and becomes one of the " professors " in a " Cash Dental Parlor." Poor devil, is it his fault? Of course he ought to have taken a position in a carpenter shop, if he had any mechanical skill or perhaps in a planing mill or machine shop. But his little learning toward mechanics made him imagine himself fitted for dentistry, and when he applied for admission into college *the professors did not undeceive him.* Perhaps a college which only accepted high grade, well educated, refined men as students, would not declare large dividends to its stockholders, but what a work its graduates would do in the world!

Of professional quacks (who, mind you, are only quacks until they get a start), there are hundreds in New York, and thousands about the country.

The simon pure quack, when you come to know him, may not be half a bad fellow. Of course he is not a professional man; but then he does not pretend that he is. All he asks is permission to do business in his own way. And strangely enough, the very laws which have been passed to elevate the profession (what a pleasant phrase that is as it rolls off the tongue) and presumably to suppress quackery, have had exactly the reverse effect. The quack is freer to go and come to day, than your most cultured professional man. Suppose we prove that? At the present moment an old practitioner is intending to leave the north because his health demands a warmer climate. He probably will settle in Texas, *if he can remember enough of what he learned at college to pass the Texas Board.* He has a chance to dispose of his practice to a widely-known dentist in New England. *It all depends upon the success of the latter with the New York State Board.* Thus the real professional men are hampered, or else confined to practice in one State. How with Mr. Quack? In January he opens a place of business in New York. In February he starts a branch in Philadelphia. In March he opens another in Boston, and in May he begins business in Chicago. He passes *none* of the State Board examinations. Why? *Because he is not practicing dentistry, he is only doing business.* His staff of operators are the professional quacks, the poor devils whom the colleges have turned out as dentists, and who have been licensed by the State Boards. He can find dozens of such men in every large city. Consequently his sphere of action is limited only by his capacity for managing a concern with many branches. In short, the quack is merely a man of business, taking advantage of the opportunity which the wise men in the dental ranks have afforded them by enacting laws, which enable them to run shops, in which all the operators have been declared legally qualified. He may not be a dentist at all.

Of this class there are hundreds—and more start in business every year.—Dr. Ottolengui, *Editorial Items of Interest.*

ARTICLE III.

THE NATURAL LAW OF CURE.

BY A. P. BETTS, M. D., WOODBURN, IND.

When the mind is burdened with the cares and perplexities of life, one turns, with a sense of relief and rest, to the contemplation of simple truth. It is with keen pleasure, only sharpened by the former chaotic state of mind, that one searches the hidden depths, unfolding, each moment, new beauties and sublime possibilities. The Christian—who previous to his conversion has been torn and buffeted by conflicting emotions, swayed by falseisms and doctrines, filled with fear and dread—finds rest and peace when he pins his faith on a simple truth, and trusts in the promises of his Maker. Likewise, the intelligent, thoughtful follower of the healing art, surrounded by false isms, lost in the vast wilderness of pills, plasters, and poisons; hounded by deadly baccilli, and treacherous germs; tossed upon the surging billows of unrest and doubt, looks across the wild, tempestuous ocean of theories and dogmas, longing for a glimpse of simple truth on which to cast his anchor of faith. On the horizon he sees rising from this sea of confusion, a haven of rest, built on simple but eternal foundations.

The study of medical history brings to the cheek a blush of shame. Each page is a bad commentary on medical mis-practice; thousands have fallen victims to the vagaries and superstitions of the past; but, as in the foundation of matter, order superseded chaos, so out of the isms, theories, and confusion of antiquity, will rise a system of medical practice founded upon eternal principles of law and truth. "Will rise," did I say? "Has risen" would be better, for in biochemistry I see the haven of rest to the troubled medical mind, a truth which can not be crushed, but will eventually triumph and supersede the theories and vagaries that have so long held arrogant control. To the mind weary of the old regime, longing for progression, and anxious to receive truth, the underlying principles of biochemistry will be found easy of comprehension. As the plant grows—dependent upon the equilibrium of its component parts—so the human system is dependent upon the quantity and equalization of the organic and inorganic constituents. A deficiency of one or more of these will cause a symptom, or cry for the needed food.

It is not my intention to tear down anything good that may be found in any system of medicine; but this is an age of keen investigation, of idol-breaking and truth-finding. He who is afraid to investigate, for fear that some cherished belief will be swept away, is not a true scientist. Age can not sanctify an error. It is with the kindest of feelings toward the science of other schools, and their many brave and noble defenders, that their underlying principles have been questioned, and the law of supplying deficiencies has been accepted and pushed to the front as The Natunal Law of Cure, by which the inorganic cellsalts of the human blood unite with organic matter to form certain material for carrying on life's processes. Biochemistry opens up a new phase of medical science, and the treatment or disease with the inorganic cell-salts is so rational, so in accordance with well-known principles of natural law, that its basic principles need only be presented to the intellect to be understood and adapted. Great truths exist as really before they are discovered as after they are known to the multitude. The vast continent of North America turned its bosom to the summer sun, and changed its garments of green and brown as the seasons passed by, before Columbus set his face " West and West?"

In 1832 we find the following written in *Stapf's Archieves:* " All the essential component parts of the human body are great remedies;" and again, in the same journal, in 1847: " All constituents of the human body act on such organs, principally where they have a function." But it remained for Dr. Schuessler, of Oldensburgh, Germany, to develop these suggestions, and make the idea foreshadowed in them the basis of a new system.

The word biochemistry is formed from *bios* (the Greek for life) and chemistry. Webster defines chemistry as, " that branch of science which treats of the composition of substances, and of the changes which they undergo." Therefore, biochemistry means that branch of science which treats of the composition of living substances; but a more accurate definition is, that branch of science which treats of the composition of the bodies of animals and vegetables, the process by which the various fluids and tissues are formed, the nature and causes of the abnormal condition called disease, and the restoration of health by supplying to the body the deficient cell-salts. The chemical composition of nearly every fluid and tissue of the human body has long been known, but until biochemistry was introduced, no practical use was made of this knowledge in the treatment of the sick.

Biochemistry is science, not experimentation. There is no more of mystery and miracle about it than about all natural laws. An analysis of the blood shows it to contain organic and inorganic matter. The organic constituents are sugar, fats, and abluminous substances. The inorganic constituents are water, and certain minerals, commonly called cell-salts. Of a living, human being, water constitutes over seven-tenths, the cell-salts about one-twentieth, organic matter the remainder. Not until recently were the inorganic cell-salts understood and appreciated. Being little in quantity, they were thought to be little in importance; but now it is known that the cell-salts are the vital portion of the body, the workers, the builders; that the water and organic substances are simply inert matter used by these salts in building the cells of the body. Should a deficiency occur in one or more of these workers, of which there are twelve, some abnormal conditions are known by the general term of disease, and according as they manifest themselves in different ways and in different parts of the body, they have been designated by various names. But these names totally fail to express the real trouble. Every disease which afflicts the human race is due to a lack of one or more of these inorganic workers. Every pain or unpleasant sensation indicates a lack of some inorganic constituent of the blood. Health and strength can only be maintained so long as the system is properly supplied with these cell-salts. Having learned this, it follows, naturally, that the proper method of cure is to supply to the blood that which is lacking. Any disturbance in the molecular motion of these cell-salts in living tissues constituting disease, can be rectified by administering the same cell salt in small quantities, to fill up the gap in the chain of molecules of the affected cell, or tissue salts. This therapeutic procedure is styled, by Schuessler the biochemic method. The blood not being perfectly balanced in all its parts, does not perfectly feed and nourish the nerves, muscles, and other tissues of the body; then a call or dispatch is sent to the throne of understanding, asking that food may be supplied. These words, asking for material with which to carry on the process of life, have, through ignorance, been called disease.

Each mineral salt has a special work to do; each has an affinity for certain organic materials used in building up the human frame. Thus, kali muriaticum, or potassium chloride molecules, work in fibrin. If a deficiency occurs in this salt, a portion of the fibrin not having workers becomes a distributing element, and may be thrown out of the vital circulation, through the nasal passages, lungs, kidneys, or bowels, producing conditions called catarrhs, colds, and coughs.

I have many times tested the efficiency of these cell-salts in disease in the past three years. In fact, my practice is conducted, almost wholly, with these biochemic remedies, and I can say that I have been more than usually successful in my work since I began using them, and I find the practice of medicene more interesting each year as I become more and more acquainted with these remedies. In order to achieve the striking results recorded by the use of these remedies, it is essential to procure these remedies prepared strictly according to the biochemical method; the best preparation of these is in the triturated form, with sugar of milk nine parts, to one part of the salt. It has been my object to give a general idea of this new system of medicine, with the hope of inspiring others to investigate it as I have done. This may be done by procuring some good work upon the subject, such, for instance, as Geo. W. Carry's Biochemic System of Medicine, for sale by F. A. Luyties, of St. Louis.

If the Editor desires I will, at some future time, give the results of my experience with this new system of medicine.—*The Medical Brief.*

ARTICLE IV.

HABITS AND PRODUCTS OF GERMS.

BY ERNEST B. SANGREE, A. M., M. D.

Professor of Bacteriology in the Medical Department of Vanderbilt University, Nashville, Tenn.

During the last few years the Brief has contained a number of articles dealing with the subject of bacteria and their products, but as all the articles seem to be on one side of the question, I thought it might not be out of place to have a few words on the other side. From the tone of some of the articles I gather that the authors believe bacteria to belong to the animal kingdom. This is a mistake. Bacteria are microscopic vegetable organisms. Then some writers assume that bacteriologists claim that all bacteria are harmful, and that most diseases are caused by germs. No bacteriologist makes any such claim. Out of the vast number of different kinds, only a few are known positively to be hurtful to man; most are innocuous, and many are beneficial. Bacteria differs from most other vegetation in that they have no green coloring matter, or chlorophyll, so universal in ordinary vegetation. By means of this chlorophyll, trees, plants, flowers, and the like, are able, in the presence of sunlight, to take carbon dioxide out of the air, and convert it into the carbon compounds making up their substance. Because of the want of this chlorophyll bacteria can not get carbon dioxide from the air, but must take it from organized carbon compounds. Most of them get their carbon from dead organic matter. These are called saprophytes, and they are our friends; for through their agency all dead things, animals, man, and trees are disintegrated, and the various elements resolved into forms that can once more be taken up by the bodies of living animals, men, and trees. Some bacteria can get their nutrition in-differently from living or from dead organic matter, and a few seem to be able to live off living organic substance alone. All such are called parasites. These bacteria can break up the cellular structures of the human or the animal body, and thus multiply at the expense of their host. They multiply with such increditable rapidity that, although each individual is extremely small, when the number mounts up into many millions and billions, the mass becomes very considerable. There is nothing strange in bacteria living off animal tissues. All nature is full of parasitism, of animals living off other animals, as illustrated by the various intestinal worms, and the varieties of lice; of animals living off plants, and the various forms of plant lice; of vegetation living off other vegetation, as the mistletoe and other parasitic plants; and finally of vegetation living off animal life, as the mould fungus that causes thrush, and the other well known fungi that cause barber's itch, fevers, and pityriasis versicolor. In this latter class belong the bacteria, which are much like the moulds in character, but which are generally much smaller, and multiply in a slightly different way.

All these parasites get their nourishment from some other organism that has already elaborated it, and frequently the parasite demands so much that the host has not enough left on which to live, and in consequence, dies. Much is said about the toxins or poisons made by bacteria, which are so hurtful to the person, or animal, infected, and about which some of your correspondents occasionally make merry. Bacteria are not the only vegetation that manufactures poisons, as every doctor well knows. Our most deadly drugs are produced by vegetation. Our strychnine, morphine, atropine, and hydrocyanic acid are all made by plants.

The nettle's sting will soon raise painful wheals, the juice of the Jequirity bean will cause a violent ophthalmia, the touch of the poison ivy will give rise to a vesicular dermatitis that will last for weeks. The deadly character of the poison from the pathogenic bacteria can easily be proven to anyone's own satisfaction, if he will perform an experiment like this, one that I have often made. Into a flask containing about a pint of sterile bouillon, put a few anthrax, diphtheria, typhoid, or tubercule bacilli. Let them multiply for a month, and then examine to see that the bouillon still contains but one kind of bacillus. Filter all the microbes out, and inject under the skin of a healthy rabbit, guinea pig, or rat, a little of the filtrate; at the same time injecting under the skin of another animal of the same kind a similar amount of sterile bouillon. Before the injection take the temperature of each animal, and continue doing so every half hour or hour. The cultures now contain so much toxin elaborated by the myriads of bacilli, that sometimes within a minute or two I have seen an animal go into convulsions, and die in five minutes. In half an hour I have seen a rat's tempetature drop from 101° F. to 95° F., and in an hour to 93° F. If the dose is not overwhelming, the animal may recover after showing every evidence of violent poisoning. Different animals succumb to different doses. The autopsy shows, in some cases, disintegration of the blood with escape of the hemoglobin, also, general cellular and necrotic changes, and evidences of distruction in the nerve and ganglia cells. The animal injected with bouillon remains unaffected. Or, try this: Take from a pure culture of anthrax bacilli, a very tiny amount, about half the size of a pin's head. Trim away the hair at the base of the tails of two brown mice, and snip through the skin with sterilized scissors. Now, rub under the skin of one mouse one-half the anthrax culture taken, and after having killed, by means of heat or chemicals, the other half, rub it under the skin of the other mouse. Within six or eight hours the first mouse will sicken, and within a day, or a little over, it will die. In its blood and in all its organs will be found thousands upon thousands of the anthrax bacilli. The second mouse will be unaffected.

When one has repeated this experiment a number of times, it seems about as plain a case of cause and effect as when a hunter, spying a rabbit, shoots at it, sees it fall, finds it dead, and discovers in its dead body the shot that were previously in his gun.

The hunter is not apt to reason that the rabbit just happened to die at the moment he discharged his gun, and that the shot were probably born in the animal. But my article grows too long, and I must refrain from adding other simple proofs. I would suggest in closing, however, that if the excellent contributors to the Brief would do a little more work in the laboratory, with microscope, test-tube, and microbe, they would probably be a little less decided in their statements.—*The Medical Brief.*

ARTICLE V.

TO REMOVE ENAMEL PREVIOUS TO CROWNING.

BY H. H. JOHNSON, D. D. S.

I will give my method for the above operation, which is as follows :

Take a molar or bicuspid, for example, which is to be prepared for an all-gold shell crown. When spacing will be required between the tooth to be crowned and the adjoining tooth, it can be more easily accomplished with vulcan disks, which are thin, strong, flexible and cut rapidly. Care should always be used not to cut the opposite tooth, which can easily be avoided by using pressure towards the tooth to be prepared. By the time sufficient space has been obtained these two sides, the anterior and posterior approximal, have generally been squared up very well, as these thin disks will easily pass down below the festoon of gum and remove all the enamel.

The buccal and lingual sides and the approximo-buccal and approximo-lingual corners is generally where the difficulty arises.

The buccal and lingual sides down to within a few lines of the gingival margin may be easily and rapidly cut away with small carborundum wheels, which now leaves the crown of the tooth above the neck in a square shape. The disk has flattened it on the approximal sides, and the small wheels on the buccal and lingual sides. By taking small, thin, double convex carborundum wheels these comers may be cut down until the tooth takes a proper shape and all the enamel is removed, except a little ring around the neck of the tooth, which generally extends up just beneath the gum margin. To remove this little ring of enamel there is nothing so effectual as the vulcan or concavo-convex wheels. The thin edge of these little vulcan cup wheels will pass easily down below the margin of the gum without scarcely wounding it and cut off all the irregularities and excrescences. The range of work which these little wheels will do is remarkable, and they are hard and tough and do not wear easily. After cutting and leveling down the bumps, the surfaces of the crown should be planed off smooth by using scalers made very hard and sharp. For this purpose the ordinary diamond pointed, double-edged scalers are best.

By placing the thumb on the crown of the tooth and grasping the scaler firmly in the fingers, commencing at the gum line and pulling downward towards the cutting edge, the surfaces can be effectually planed off and rendered perfectly smooth. If any enamel should have been left by the wheels it can be easily removed with the scalers in this way.

As these scalers come from the manufacturers, they are too soft for the purposes suggested above, and must be hardened. This can easily be done by heating the point to a white heat and plunging in cold water or oil. Some claim that mercury is still better. After treating them in this way you have an instrument that will cut enamel, or even glass if required.

In those cases of leaning third molars which have tipped forward on account of the loss of the molars in front these little cup-shaped vulcan wheels are indispensable for reaching the anterior surface.

I shall offer no apology for consuming so much space in describing a simple method of removing enamel. I believe the importance of the subject justifies it.—*American Dental Weekly.*

ARTICLE VI.

THE EDUCATION FEATURES OF THE DENTAL ASSOCIATION.

BY J. PERCY CORLEY.

Abstract of a paper read before the Southern Dental Association.

The three great educational factors are, the journal, the college, and the Association. Our dental literature has contributed more to the advancement of the profession socially and scientifically, than any other department of the educational *regime*, and as an outgrowth of its influence we have the college and the Association, whose high curricula and chase code of ethics are the source of pride to every son of America.

The college professor is the vessel which bears the inspiring draught to our thirsty lips; he should be, and often is, an artist with instinctive genius for discerning the scattered forces of our nature and arranging them in harmonious accord.

The Association is a great confessional, where we relate our failures, pointing to where the hidden reef lies beneath the glassy surface. We bring our problems and ask advice. We also bring the treasures which we gather as we climb the rugged steeps of experience and scale the mountains of difficulties. The Association is also a great store-house which holds within its capacious vaults the accumulated wealth of hundreds of lives devoted to toil and study. It is a kind of professional Mecca to which we make annual pilgrimages to pay tribute at the shrine of progress, and acquire strength for the ever increasing responsibilities of life.

Upon the shoulders of the dental profession rests the burden of educating the public. There is scarce an institution of learning to day which has not in its curriculum a treatise on "physiology and hygiene," and its campus and gymnasium for the cultivation and development of the body; but *the oral cavity*, the most important department in the human economy, is passed with scarcely a word. The tooth-brush is more important than dumb-bells, and dental sanitation the first step in hygienic routine. I admit the need of dental surgeons in the army and navy, but the nursery needs dental attention more than the garrison, and the school boy more than the soldier. The sooner we recognize in the boy the fetus of the man, and the baby as our most important patient, the sooner will we attain the ideal in dental achievement.

It has been said that the Association consists of egotists seeking for office; the college professor electioneering for students; the inventor advertising his appliances, and the depot man peddling his wares! But if a man is qualified to serve his profession in an official capacity, it is his duty to use legitimate means for the attainment of such a position of usefulness and honor; it is the duty of the college to let the profession know the material she has in her faculty and to demonstrate the advantage offered; it is kind of the inventor to show us his appliance and show us how to use, thus saving us from investing in something else we might be unable to use to advantage; and the depot man confers a genuine favor on those of us who live in the country, by his magnificent displays of all the paraphernalia of our profession. So these accusations bring no discredit upon the Association. May this convention mark the dawn of a new era in dentistry which shall spread as the morning light, until the dark shadows of ignorance and superstition shall havh given place to the glory of intellectual day. The social, intellectual and clinical features of the "Southern" have stood for years without a parallel. Let us then build upon the prestige of the past a "Parthenon" for the future. The wise Creator did much for every clime; but when the Lord made "Dixie" he did his best.

The ideal dentist is an incarnation of German learning, French art, English thoroughness, American push, and Southern chivalry.—*American Dental Weekly.*

ARTICLE VII.

ORAL HYGIENE.

BY EUGENE S. TALBOT, M. D., D. D. S., CHICAGO.

Read before XIIth International Medical Congress at Moscow, Russia, August 18-26, 1897.

That the mouth and teeth should be kept absolutely clean and free from deposits, every practitioner will admit is but an axiomatic statement. Neglect in this direction entails degeneration of the teeth and soft parts of the mouth, which in turn ultimately affects the general health. Many dentists and most patients are unmindful of the necessity of keeping the gums and mucous membrane healthy. Frequently, despite strict injunctions are given, the patient returns with the mouth in the most unhygienic condition. The patient has gradually lost ambition and allowed the teeth and mouth to fall far beneath ideal prophylaxis.

As a profession dentists are apt to congratulate themselves upon the rapid advancement made in the specialty. forgetting that bacteriologic research demonstrates a fact which physicians and dentists have suspected, that the mouth is the culture medium for germs which, when opportunity offers, play their part in producing many diseases which flesh is heir to.

Galippe, Black and Miller, after special microscopic study of fluids and excretions of the mouth, have shown that this organ is a very fruitful field for the propagation of bacteria. Miller says, "Within the last few years I have isolated more than too different kinds of bacteria from the juices and deposits in the mouth. Physiologists and chemists have also shown that foods, especially starch and sugar, taken into the mouth, on coming in contact with the saliva, chemical changes immediately take place, as a result of which lactic acid is produced. Miller has found that lactic acid is the source from which decay of the teeth results.

It would be strange if some of the numerous bacteria, under favorable environment, should not produce diseases of the mouth, alimentary canal and general system.

Micro-organisms are more destructive in the mouths of persons whose vitality is below par than those who are normal. People who have been ill for any length of time soon realize that the teeth are giving way, that pus germs infect the mouth and that the soft tissues are very unhealthy. A class coming for treatment, whose mouths are exceedingly prone to disease, is that of the degenerates. It is almost impossible at present for the majority of dentists to distinguish this class from the normal, yet they exist in dental practice in large numbers.

The mouths of this class are in an unhealthy condition; the teeth irregular and often badly decayed, gums and mucous membrane swollen, with pyorrheal oozing from gums and teeth. Frequently ulcers occur at different localities, and saliva flows freely from enlarged glands.

Degeneracy is stamped upon their faces. The bones and mucous membrane of the nose are often hypertrophien. In such cases adenoid vegetation, together with other obstructing factors, prevents nose-breathing, and mouth-breathing results. Necessarily many germs otherwise absent are taken into the mouth, which afterwards infect the lungs and alimentary canal. These types of mouth are observed in their most exaggerated forms among the imbeciles, dements and stuporous lunatics. Local treatment of such patients would be fallacy.

I lay stress upon this class of cases, because of the lack of literature on the subject and the difficulty of impressing the patient with the importance of the care of the mouth. Such persons, even if otherwise fairly well balanced, are too unstable and have not sufficient continuous will power to carry out successfully instructions of the operator. These patients, including those who are afflicted with disease, require constitutional treatment to restore the tonicity of structure, after which local treatment proves successful.

I would not, however, for one moment be thought to discourage the attempt to keep the mouth in hygienic condition, especially in cases of invalids and small children, who must receive the greatest care from nurse or parent, As absence of general tonicity will prevent a local restoration to health, in like manner will lack of local cleanliness cause systemic disturbances. Besides illness, worry, anxiety, trouble will produce malnutrition and tissue degeneration.

It is not necessary to discuss the various bacteria and their action upon the fluids and tissues of the mouth, since this has been thoroughly brought before the profession by Miller. To treat the subject of this paper in a proper manner it is necessary to speak only of a few forms of bacteria which, if destroyed, the other kinds will succumb.

Two of the most marked forms of degeneration of tissue as the result of uncleanliness are tooth decay and gum inflammation, resulting in pyorrhea. Pasteur has remarked, "that whenever and wherever there is decomposition of organic matter—whether it be the case of an herb or an oak, of a worm or whale—the work is exclusively done by infinitely small organisms." Therefore I commend the following propositions : If the mouth and teeth were kept absolutely clean, so that chemical changes could not take place, the teeth would certainly never decay, no matter how imperfectly the enamel might develop. If the gums be stimulated in a proper manner, and kept in a healthy condition, they are decidedly less liable to become infected with pyorrhea.

Bearing these two propositions in mind and striving to attain the results, the mouth will become comparatively healthy. How then shall we accomplish the desired object? Use of proper tooth-brush, mouth wash and a knowledge of their use, is the indication. The ordinary toothbrush falls far short of what is required for proper care of the teeth. Most have soft bristles, or else they become soft, for the reason that they are sometimes kept in a closed vessel or used so often that they are not allowed to dry. A soft-bristle brush should never be used, only a medium or hard one. The size of the brush is also to be taken into consideration. Most of them are too large and on that account it is difficult to get beyond the molars. The shape of the brush is also to be borne in mind. Dr. M. L. Rhein, of New York, has taught the evolution of the toothbrush. The curved handle and small end which contain the bristles are certainly a great improvement over straight handles or those bent in the opposite direction from the bristles. The tuft and concavity of the bristles (so far as they go) are an improvement over bristles which are at right angles to the handle. This allows the posterior portion of the molars as well as the spaces between the teeth to be reached when the brush is properly used.

With the proper use of such a brush three times a day, and floss silk twice a day, any person of ordinary intelligence, after being instructed, can keep the teeth clean. There can be no question but that if the gums be well stimulated and an antiseptic wash used, pyorrhea will never appear. Pyorrhea is due either to simple or chronic inflammation of the gums, no matter whether the cause be local or constitutional. Both simple and chronic inflammation may be reduced, first by blood-letting, to relieve the congestion, and second, by stimulation of all the parts. This, however, cannot be accomplished with the toothbrushes now in use. The bristles are not only too soft, but they are so close together that when the brush is applied to the tooth, those bristles which come in contact with the teeth prevent the others reaching the gums.

I have given this subject considerable study, the result of which is the following brush, which for the past two years I have had my patients use, and with the greatest satisfaction. It is made similar to the prophylactic, only smaller in every way. Spaces are left at every two rows, so that the teeth will pass in between them and the bristles reach the gums, Between the tuft upon the end and the body of the brush quite a space is left, so that the front teeth. upper and lower, will go between and the tuft reach the gums above, below and posterior to the incisor teeth. Inflammation of the gums starts most frequently at these localities first and is usually in its most severe form, since with the ordinary toothbrush it is more difficult to reach these parts.

It is not an easy matter to find a mouth-wash that will destroy bacteria, and at the same time not become injurious to the mucous membrane. Miller, after repeated experiments, says, "An examination of the above results will soon convince us that there are very few substances at present in the dental materia medica which are available for disinfecting the human mouth." After experimenting with twenty-six different drugs, it was found that with one exception, not one of these drugs would destroy bacteria in less than five minutes, most of them requiring over eight minutes. Out of all the drugs which are used daily, trichlorid of iodin destroyed bacteria in one and one-fourth minutes, saccharin in three-fourths to one minute, benzoic acid in two to two and one-half minutes, salicylic acid in three-fourths to one minute. Of these benzoic acid seems to be the only drug from which a suitable mouth-wash can be made. Listerine and thymol have been favorite mouth-washes in America, but lately a new preparation has become very popular, namely Borolyptol. It is composed of five per cent. aceto-boro-glycerid O., two per cent. formaldehyd, in combination with the antiseptic constituents of pinus, pumilio, eucalyptus, myrrh, storax, benzoin. Experiments made by able chemists have shown that it is fully as strong and will destroy bacteria as readily as 1-1,000 bichlorid of mercury.

I have used borolyptol in my practice for the past year with success, especially in cases of pyorrhea alveolaris, without injury to the mucous membrane. Miller says, "that trichlorid of iodin is decidedly superior to the bichlorid; it is furthermore far less disagreeable than the latter, in fact, not at all disagreeable, it has, however, most unfortunately, an acid reaction, and is therefore not suitable for daily use as a mouth-wash." Nevertheless, in cases of pyorrhea alveolaris after the deposits are removed, I know of nothing better than the officinal preparation of iodin, saturating the gums and pockets throughout three times a week. It acts not only as an astringent, but it prevents putrefactive changes, decomposes sulphurated and phosphorated compounds; it therefore acts as a powerful astringent and will destroy most forms of bacteria. These two drugs, with a faithful application of the toothbrush, are all that is necessary to keep the mouth in a healthy condition. By this method the worst forms of diseased gums and inflamed mucous membrane can be successfully treated.

In regard to tooth-powder, I feel confident that many dentists make a mistake in recommending nothing but soft substances. One writer upon the subject of oral hygiene says, in speaking of a tooth-powder, "It should contain a scouring or polishing agent of the nature of a minutely-divided powder, such as precipitated chalk." I would like to ask how much scouring and polishing can be done with chalk? There is no objection to using the chalk for bulk, but to scour and polish the teeth I prescribe equal parts precipitated chalk and powdered cuttle-fish, carmin to color, orris root and fine sugar to sweeten. This mixture, when rubbed up and put through a No 60 sieve, makes an excellent powder which may be used two or three times a week.—*Dental Digest.*

ARTICLE VIII.

THE USE OF SOFT FOIL.

BY C. C. CHITTENDEN, D. D. S., MADISON, WIS.

Read at Twenty-Seventh Annual Meeting of Wisconsin State Dental Society, July 20-22, 1897.

Up to less than forty years ago the only form in which gold was used for filling teeth by all the dentists of the world was soft foil. If the foil "stuck together" or acted "stiff," i. e., was not entirely free from what we now know to be "cohesive properties," it was at once condemned as unfit for use and "probably not properly refined." The gold beaters had great difficulty in overcoming this objectionable property and often had their work to do over again because of its presence. The only way fillings were made was on the wedge principle of impacting the soft and ductile foil from wall to wall of a cavity so shaped as to be of a general retaining form.

The plugging instruments used, of all shapes and forms, with whatever kind of points, were always perfectly smooth and polished throughout, with large handles capable of being firmly grasped by the full hand, so that great force and pressure could be brought to bear to "pack" the gold against the cavity walls. The commonest form of gold used was about No. 6 to 10 foil rolled into "rope" form. If the cavity was a molar crown, for instance, it would be shaped with nearly perpendicular walls, no overhangs, and the mouth of the cavity slightly larger than the floor.

The end of the rope was firmly folded over the end of a proper sized plugger and expertedly packed and fastened into a convenient angle or notch, the plugger withdrawn and caught into the rope far enough back to bring down the main rope into the cavity beside the end already secured, forming a loop long enough to overhang the depth of the cavity from one-sixteenth to one eighth of an inch. This was repeated until the circuit of the cavity was made, each fold being firmly packed against the preceding one. Then a plugger as large as admissible, with a flat, smooth end, was forced to the bottom in the center and pressure brought to bear in every direction toward the side walls, firmly forcing the loops standing on end against them. This had the effect of forcing the overhanging ends of the loops over the edges of the cavity. Next a large firm roll or pellet of foil was forced into the central pit, then a smaller wedge point was forced in beside it, and so long as an opening could be made other and smaller pellets were forced into the general wedge.

When this wedging process was complete, the next step was to condense down the overhanging ends of the loops. This was a very important part of the operation and demanded much skill. First a flat-faced smooth plugger (and all pluggers were smooth) condensed the gold straight on end. This left the marginal gold overlying the wall edges. This marginal surplus was then cunningly coaxed toward the center until, if the proper proportion of overhanging gold had been maintained, a perfect and solid margin resulted. In all this process nothing had been done to mar or tear or in any way disturb the integrity of the heavy soft foil, and there was a solid, impervious filling as a result, without the slightest danger of any flaking or disintegration.

Of course it was thought best if possible to keep things dry during all this time, but if moisture or a flood did break in the operator went right on, after letting the patient "spit out."

It mattered little where the cavity was located. The aim in preparation was to secure walls as firm and strong as possible, which continued of nearly equal proportions throughout the whole circumference of the cavity, so that the wedge fastening was complete. To accomplish this the file was a constant necessity. If the proximate surface of a bicuspid or molar was involved and the cavity encroached on the grinding surface, the V file was freely used until even the wall toward the crown surface was firm enough to be wedged against. This left of course a large space between the teeth, just the opposite of what we are to-day taught to consider correct, i. e., the nearest point of contact with the adjoining tooth was next the cervical border and not near the now-called occlusal surface.

It was noticeable too that the file left its trail of lines along the sides of the V, and there was no engine with sandpaper disks to polish them out, but for some unaccountable reason a large percentage of these soft-foil wedge fillings have stood their ground, and have been seen in many a mouth of the passing generation like the Sphynx calmly surveying a surrounding desert waste.

Another form of using soft gold in these cavities was to fold the foil into ribbons of a width one-third greater than the depth of the cavity and roll this ribbon on a square drill point into cylinders of different sizes and density. These were introduced on end and packed against each other around the walls like the loops spoken of, and the final wedges inserted in the center, then condensing the whole on end.

Now, gentlemen, I have told of all this not to try to convince anybody that it is the best and only way to fill and save teeth, but to call attention to a property in gold that I feel is not given enough attention to-day in college training, where young men are supposed to be fully prepared and equipped to do all things required of them in the best and wisest way. Soft gold is susceptible of being brought into perfect contact and adaptation to the side and floor walls of proximate cavities of molars and bicuspids by the wedging process and the burnisher—*more* perfect contact with far less danger of injury to delicate and frail margins of such cavities than the harder and less plastic cohesive forms of gold in general use. With the latter the mallet is almost indispensable, and in many cases the result of its use is to check, mar and even pulverize the enamel border, thus, although not visible to the naked eye, insuring certain ultimate failure of the operation. This class of cavities is in my judgment least likely to failure by the use of soft gold for the proximate portion, finished toward the grinding surface with any form of cohesive gold desired.

The two best ways of making such fillings, are . First, Use a band matrix not too closely fitting the walls, and so force and wedge soft foil against the walls and matrix as to cause a surplus or overhanging of gold throughout the proximate borders which, after removal of matrix, must be burnished carefully over the margins and properly finished and polished. Second : Make cylinders of soft foil as before described, one-fourth to one-third longer than the lateral depth of the cavity, and so place and wedge them against the floor and walls that their overhanging ends extend into the space, there to be later burnished against and over the enamel margins. It is the simplest matter in the world to complete these operations with cohesive gold, beginning at any point from which forward it is desirable to have a hard welded surface for mastication.

Do not understand me to claim that this is the only successful method of adapting gold to proximal margins be thoroughly and intelligently pursued, a permanent success is more likely to result than where indiscriminate and unmerciful mallet-pounding is used to adapt stiff and hard cohesive gold to frail enamel margins.

DISCUSSION.

Dr. R. G. Richter: I always use soft foil in proximal cavities, because the edges can be burnished over so nicely. I have seen fillings that have stood the test of time, while fillings in the same mouth made with cohesive foil failed simply because of the breaking down of the enamel rods from the force used in condensing.

Dr. R. Maercklein: Cohesive foil may be just as soft as non cohesive. The difference is, that the latter will not cohere, while the former will stick just where it is placed. If you could key non-cohesive foil there would be no necessity of finishing off the filling with cohesive. If you put enough pressure on it about the same as tin foil—simply wedge it in.

Dr. B. G. Maercklein: There is a good reason why the work done by the older practitioners stood the test of time better than that performed by the dentists of the present day. The former class were skilled. They had trained their hands and eyes to a degree of perfection seldom reached by the present generation of dentists. And Why? Because they had to. With the newer appliances and improvements, such as rubber dam, dental engines, mallets and cohesive gold, have come into the profession a line of inferior skill and deficient development in manipulative ability. The cause of one-half the failures to-day is not the material but the manner in which it is used.—*Dental Digest.*

Editorial, Etc.

PROPOSED DENTAL LAW.

Note April 8, 1898. The Legislature has adjourned and the Dental Law of 1896 remains unchanged.

The following are the proposed amendments to the dental law of 1896. Both have been referred to the Senate Committee on Sanitary Condition of the State. The first emanates from the Maryland State Dental Association and was read February 17, 1898; the amendments to Section 12 of Article 32 of the Code was introduced (March 4, 1898), by request of the attorney who defended the party fined $100 by the Criminal Court of Baltimore City. This judgment has been affirmed by the Supreme Bench of Baltimore City, and the Court of Appeals of Maryland.

A BILL. Entitled An Act to repeal Article 32, of the Code of General Laws of Maryland, title, "Dentistry," as re-enacted and amended by Chapter 378, of the General Assembly of Maryland, passed at the January session, 1896, and to re-enact said Article with amendments.

SECTION 1. Be it enacted by the General Assembly of Maryland, That Article 32, of the Code of Public General Laws, title "Dentistry," as re-enacted and amended by Chapter 378, of the Acts of the General Assembly of Maryland, passed at the January session, 1896, be, and the same is hereby repealed, and re-enacted, so as to read as follows:

1. It shall be unlawful for any person to practice or to attempt to practice dentistry in this State, within the meaning of the penalties of this Act, unless such person shall previously have obtained a certificate, as hereinafter provided, and unless such person shall place and exhibit

on the door or other front part of the building, wherein such person shall so practice or attempt to practice dentistry, a sign or signs, on which shall be the name of such person.

SEC. 2. There shall be a State Board of Dental Examiners, whose duty it shall be to carry out the purposes and to enforce the provisions of this Act. Said Board shall consist of six practicing dentists of recognized ability and honor, residents of the State of Maryland, who have held regular dental diplomas for at least five years The members of said Board, as at present constituted, shall hold office for the residue of the respective terms for which they may have been appointed. On the expiration of the term or terms for which any one or more of the members of said Board may have been appointed, and on the expiration of the term or terms for which any one or more of the members of said Board, appointed in pursuance of the provisions of this Act, shall have been appointed, the Governor shall appoint the successor or successors of said member or members of said Board, from a list of dentists duly qualified, as hereinbefore prescribed, of double the number of vacancies to be filled, proposed and submitted to him by the Maryland State Dental Association, and chosen by a majority vote of the members of said Association present at a meeting of said Association, called for that purpose, of which meeting at least two weeks' notice stating the time, place and purpose thereof, shall be given to the members of said Association, and mailed to the addresses of said members by the Secretary thereof. The term for which the members of said Board shall be appointed, as aforesaid, shall be six years, and until their successors shall have been appointed and qualified. In case of any vacancy occurring in said Board by reason of the death, incapacity or neglect or refusal to act of any member thereof, or in any other way, the Governor shall, from a list of dentists duly qualified, as hereinbefore prescribed, of double the number of vacancies to be filled, submitted and proposed to him by the Maryland State Dental Association, and chosen as hereinbefore provided, appoint a successor or successors of said member or members, who shall hold office for the remainder of the unexpired term or terms of said member or members. Any member of said Board who shall be absent from two successive regular meetings thereof shall cease to be a member thereof.

SEC. 3. Said Board shall choose one of its members President, and one Secretary thereof, whose duties shall be those usually appertaining to their respective offices. But the Secretary of said Board shall, in addition to said duties be the legal custodian of all the property, moneys, minutes, records, proceedings and the seal of said Board. Said Board shall hold regular meetings in the months of May and November in each year, and special meetings as it may deem necessary. A majority of said Board shall constitute a quorum, but a less number may adjourn from time to time. The proceedings thereof shall at all reasonable times be open to public inspection. Any examination paper, submitted by an applicant for registration as hereinafter provided, shall at all reasonable times be open to the inspection of the members of the Maryland State Dental Association and of the applicant. Said Board shall adopt and have a seal inscribed as follows: Maryland State Board of Dental Examiners, 1884. Said Board shall annually on or before the first day of December in each year, make to the Governor, a report of its proceeding in writing.

SEC. 4. Transcripts from the book of registration, hereinafter provided for, certified by the Secretary of said Board, and sealed with its seal, and all certificates issued in pursuance of the terms of this Act, shall be evidence in any court of this State.

SEC. 5. Any person of good moral character, twenty-one years of age, who has graduated at, and holds a diploma from any university or college, incorporated and authorized to grant diplomas in dental surgery, by and under the laws of the United States, or of any one of the United States, and who is desirous of practicing dentistry in this State, may make application in writing to said Board, to be examined by it, with reference to his or her qualifications to practice dentistry, as aforesaid; and upon passing an examination satisfactory to said Board, which examination shall be in writing so far as practicable, his or her name and residence or place of business shall be registered in a book kept for that purpose, and a certificate shall be issued to such person, which certificate shall be signed by the officers of said Board and shall bear its seal, and shall further state the name of the person to whom the same is issued, the name of the university or college at which such person has graduated, and from which he or she holds a diploma, the date thereof, and the date of the issuance of the certificate. At the discretion of said Board, any applicant otherwise qualified may be registered without being subjected to such examination; and any person who has graduated at and holds a diploma from any university or college, incorporated and authorized to grant diplomas in dental surgery, by, and under the laws of the United States, or of any one of the United States, and who has after examination (but not otherwise) been duly registered and licensed to practise dentistry by a Board of Dental Examiners, created and existing under the laws of the United States, or of any one of the United States, shall be registered by said Board without being subjected to such examination.

SEC. 6. A fee of ten dollars shall be paid to the Secretary of said Board at the time of his or her application by any applicant for examination or registration, or both, as often as he or she shall apply for the same, which money shall be expended by the Board in defraying its expenses.

SEC. 7. A temporary certificate for a limited period of time, to be specified therein, may be issued by the officers of said Board to any applicant who is the holder of a regular dental diploma, and who has been duly registered by a Board of Dental Examiners, created and existing under the laws of the United States, or of any one of the United States, or to any applicant who has graduated at, and who holds a diploma from any university or college incorporated under the laws of the State of Maryland, and authorized to grant diplomas in dental surgery. But no such certificate shall be issued for a longer time than until the next regular meeting of said Board. The fee for the issuance of said temporary certificate shall be five dollars, which shall be returned to said applicant in case he or she shall pass an examination satisfactory to said Board, at the next examination succeeeding the issuance of such temporary certificate.

SEC. 8. Every person shall be said to be practising dentistry within the meaning of the penalties of this Act who shall, either for pay in any form or gratuitously, perform any operation, or part of operation, of any kind pertaining to the human mouth, treat diseases of the human jaws or teeth, or correct malpositions thereof; or who shall advertise, or hold himself out to practise dentistry or dental surgery in any of its branches, by putting out a sign or in any other manner.

SEC. 9. Any person who shall violate any of the provisions of this Article, shall be deemed guilty of a misdemeanor, and shall, upon conviction thereof, be fined not less than fifty dollars, nor more than three hundred dollars, or be confined not more than six months in Jail, or both, in the discretion of the Court.

SEC. 10. Nothing in this Article shall be so construed as to interfere with the rights and privileges of physicians and surgeons duly licensed to practice their profession in this State, or of persons holding certificates duly issued to them by the State Board of Dental Examiners of Maryland, prior to the passage of this Act; or of dental students operating under the immediate supervision of their instructors in dental infirmaries of dental schools duly incorporated under the Laws of the State of Maryland.

SEC. 11. And be it enacted, That nothing contained in this Act, shall prevent or be so construed as to in any way to hinder the prosecution, conviction or punishment of any person who may have offended against any of the provisions of Article 32, of the Code of Public General Laws, title "Dentistry," or against any of the provisions of any of the Acts of the General Assembly of Maryland, of which the same was a codification, or of said Chapter 378, of the Acts of the General Assembly of Maryland, passed at its January Session, 1896.

SEC. 12. And be it enacted, That this law shall take effect from the date of its passage.

A BILL. Entitled An Act to repeal and re act with amendments, Section 12, of Article 32, of the Code of Public General Laws of Maryland, title "Dentistry."

SECTION 1. Be it enacted by the General Assembly of Maryland, That Section 12 of Article 32, of the Code of Public General Laws of Maryland be, and the same is hereby repealed and re-enacted so as to read as follows:

SEC. 12. Nothing in this article shall be so construed as to interfere with the rights and privileges of resident physicians and surgeons or with persons holding certificates duly issued to them prior to the 4th day of April, 1896, by a dental board created under the laws of any one of the United States, nor with any person who was engaged in the practice of dentistry prior to the thirty-first (31st) day of March, 1884, and who began the practice of dentistry in this State on or before the 4th day of April, 1896, nor with dental students operating under the immediate supervision of their instructors in dental infirmaries or dental schools created under the laws of this State.

SEC. 2. And be it enacted, That this Act shall take effect from the date of its passage.

QUESTIONS GIVEN TO APPLICANTS FOR CERTIFICATES TO PRACTICE DENTISTRY IN MARYLAND.

Copy of questions given by the Maryland State Board of Dental Examiners, in the University of Maryland Dental Department. Thursday, November 11, 1897, to applicants for certificates to practice dentistry in the State.

BACTERIOLOGY.

1. What is the general name of micro-organism of most importance in causing disease?
2. Can you give a further classification of bacteria?
3. How are they distinguished one from other?
4. Give some of the principal diseases caused by the bacteria.
5. What are the names of the bacteria supposed to be especially concerned in causing suppuration?
6. What is a disenfectant?
7. What is an antiseptic?
8. How are bacteria generally propagated?

CHEMISTRY.

1. How many elements are their in nature?
2. Are they all of the same importance?
3. Give the names of some which are of great and general interest?
4. Why are these elements said to be of great and general importance?
5. Give the names of some of the less important elements?
6. Are not silver and gold platinum amongst the most important elements?
7. Why?
8. Is there any other class of elements?
9. How are these elements divided as to their physical properties?

10. Give the name of the cases?

11. Which of them is present on the earth in the largest quantity?

12. How much of the weight of the earth is made up of oxygen?

13. When was oxygen discovered, and by whom?

PATHOLOGY, THERAPEUTICS AND MATERIA MEDICA.

1. What is Pathology?

2. What is Therapeutics?

3. What is Materia Medica?

4. Describe Inflammation?

5. What are the terminations of Inflammation?

6. Name an instances where one or more of the symptoms of Inflammation may be absent?

7. What is pus?

8. Give the stages of Inflammation from its inception to the formation of pus?

9. What is Granulation?

10. What is Fever?

11. What is an Ulcer?

12. Describe caries of the Teeth?

13. Describe caries of the Bone?

14. Write a prescription containing three or more ingredients.

15. How much arsenic should be applied for distruction of dental pulp?

16. Dose of Morphia and the Antidote?

17. What is a Hæmostatic?

18. Name several?

19. What is an Anodyne?

20. Name several?

21. What is an Anaisthetic?

22. How do they affect the system?

23. What means should be used if dangerous symptoms occur?

OPERATIVE DENTISTRY.

1. Give your method of preserving the incisors when affected by caries at the age of twelve years, and name the materials you would use.

2. Give your method of treating six year molars when the nerve is slightly exposed at the age of fifteen years, all the other teeth being good.

3. Give your method of treating when the nerve is nearly exposed in the anterior teeth.

4. What is your method of capping exposed nerves, under what circumstances would you cap and what materials would you use.

5. Name drug used in destroying nerves of teeth and how applied.

6. At what period of life can six year molars be extracted with least injury to contiguous parts.

7. Describe the action of arsenious acid on the dental pulp.

8. Describe cataphoresis and name pathological conditions for which it is employed.

9. What is Epulis, give its treatment.

10. What are Alloys and what is Amalgam.

11. After devitalizing the nerve, describe subsequent treatment.

12. What is the diagnostic sign of hypersensitive dentine.

13. In respect to the properties of cohesive and non-cohesive gold, what is the distinction between them.

14. Name the different materials used for filling teeth and how they should be introduced.

15. Give full details of the operation of twelve year molars when the nerve is exposed on the posterior aproximal surface at the margin of the gum.

16. When the nerve is exposed and the teeth healthy, what is the method of treatment.

17. How do you preserve teeth, when there is much acid in the mouth, and the teeth are very much affected by it around the gum, what is your treatment.

18. What is temperament, of what use is a knowledge of it to a dentist.

PHYSIOLOGY.

1. What are the primary stages of digestion in which the mouth is concerned?
2. What are the functions of the peridental membrane.
3. What changes take place in the blood as it passes through the lungs?
4. What is meant by residual air? tidal air?
5. What proportion of the body's weight does the blood compose?
6. What is reflex action and give examples.

ANATOMY.

1. Name the bones of cranium.
2. What cavity does the superior maxillary contain.
3. Name the organs of Insalivation.
4. What are the principle muscles of Mastication?
5. Describe the ramus of the inferior Maxilla.
6. What are the branches of the fifth nerve supplying the teeth.

Communicated.

AMERICAN MEDICAL ASSOCIATION.

DENVER, MARCH 7TH, 1898.

GENTLEMEN:—The American Medical Association will hold its fifty-first annual meeting in the city of Denver, Colorado, June 7, 8, 9 and 10th, 1898. During the same week the Colorado State Medical Society will convene as will also the Rocky Mountain Interstate Medical Association, whose membership embraces the physicians of Arizona, Colorado, Idaho, Montana, New Mexico, Utah and Wyoming.

As is customary in connection with these meetings there will be an Exhibit. For this purpose the Gettysburg Building has been secured. It is especially well adapted and conveniently located to all hotels and section meeting places. In the same building will also be located: Office for registration, Bureau of Information, Post Office and Office for endorsing Railroad certificates.

It is the intention of the profession in Denver to make this meeting surpass all previous meetings of the Association and already the indications point to a large attendance.

The physicians throughout the country begin to understand the meaning of western hospitality and will take advantage of the special concessions to be made by the railroads to visit Colorado. The exhibitors will also have the opportunity of coming in contact with the doctors of a new region who may not again be so easily and generally reached. They are men who are open to new ideas and able to appreciate them.

Address all communications regarding exhibits to

C. K. FLEMING, Chairman, California Bldg.

Monthly Summary.

HINTS.—BY A LAZY MAN.—1. You can cut vulcanite with a file better when both are dry than wet. If you think you need a new file, dip your plate in dry plaster of paris, rub it off with a wheel-brush, and ofter you will find that the fault is not in the file.

2. After you have polished your plate, sprinkle a little dry plaster on it, and give it a run over the soft wheel-brush.

3. Tack a square piece of bed-tick or apron cloth under the part of the bench where you work. It will always be there. Pull it over your knees when you sit there to work, Keeps your pantaloons clean, and often keeps you from saying naughty words, as it catches teeth you might drop on the floor.

4. When your rubber overshoes wear out, keep the

soles. Very handy if fastened on a block convenient to use. The heels make good bench blocks.

5. Keep your old kid gloves and wear them when sandpapering or polishing artificial sets. Rub vaseline into your finger-nails, and over your fingers before putting on the gloves.

6. When your dental engine kicks or makes a noise at the joints, oil it a little. If that does not stop the row, do not swear at the manufacturer until you have got down on your marrow-bones and tightened up screws that may be loose. If that succeeds shake hands with yourself; if it does not, smash something. It will ease your mind.

7. Cover your dental engine with a cover the shape of an old candle extinguisher.—*Dominion Dental Journal.*

PRESCRIPTION WRITING.—BY L. D. S.—The *New York Medical Journal* quotes from an article in a druggist's periodical, on the subject of drug names and prescription writing, which may apply in part to dental practice. The prescription pad is not used as much as it should be by the dentist, and in the matter of lotions, etc., for special pathological condition of the oral cavity within the prerogative of our practice, we have many important demands upon our knowledge of prescribing. While we run no such risks as the general physician, even our limitations demand great care to avoid confusion and error, not to speak of the less formidable mistakes of chemical incompatibility. The *New York Medical Journal* quotes the following formula.

"℞ Hydr. chlor. - - - - gr. xx.
Tinct. hyosey. - - - - ʒ i.
Aqæ. - - - - - - ʒ ix.

"M. Draught to be taken at bed time."

"Which chloride of mercury is intended?" asks the writer. "The context shows plainly that neither is wanted but chloral hydrads. Is it not all wrong that human life should thus be trifled with?"

To which we may add, "Does it not seem all wrong that the laws of a State permit the most dangerous prescriptions to be compounded by young men of meagre and insufficient preliminary and practical training?" We happen to be familiar with the requirements for the practice of pharmacy in most of the States, and we do not hesitate to affirm that there is not one legalized prescriber, from the Atlantic to the Pacific, in Canada who would be so dense and ignorant as to suppose that a chloride of mercury was meant in the above prescription. The education of the pharmacist, like that of the dentist and the physician in Canada, starts in the right direction by a thorough preliminary examination almost equivalent to that of the Bachelor of Arts of our Universities. —"Dominion Dental Journal."

DISCOLORED TEETH.—All teeth that are discolored are without living pulps. Histologically they have no cells, pigment cells or any others. The dentin consists of formed matter which has been made by cells. It seems to me that the discoloration of teeth is caused probably by two conditions. The tooth structure, the dentin is open, it is traversed by the tubuli; now the tubuli may be filled with a substance which has a color, and which makes the tooth a different color from the rest of the teeth in the mouth, because the tubuli are filled with it. To bleach that tooth you must destroy the foreign colored substance which fills the tubuli.

Is there not another possibility for discoloration of the teeth, namely, that the dentin itself has been affected by something, so that it is of different composition, and the resulting compound of the dentin and some foreign substance has a color different from that of normal dentin? It stands to reason that one of these cases would bleach more easily than the other. I think very often you have the tubuli of the dentin filled with blood pigments which may be cause of discoloration, which can be bleached much more easily than in the second condition in which the dentin itself is chemically compounded with some substance which gives it a new composition and a different color. I do not understand the use of "pigment cells" in relation to the teeth in this connection at all. If the dentin is affected by a substance which combines with it, it may be less deeply affected, but it is a homogeneous substance which is affected, and not individual cells. Just the same as you may have an ivory billiard ball stained part way through or all the way through, but it has no stained cells, it has not pigment cells, but it is the staining of a definite substance, just as you have any other chemical substance which is changed in color by combination with another substance.—*Dr. F. B. Noyes, in Dental Review.*

SHALL THE DENTIST ADVERTISE?—A correspondent in the *Items of Interest* says some good things in a recent article:

"The man who is seeking the road to wealth is misdirected when he chooses the dental profession. The average dentist lives well, spends freely dies poor and in debt."

"Keep out of the theatre programmes, for they are almost exclusively in the hands of the quacks, and for this reason the reputable man, feeling that there must be a dividing line between himself and the incompetent, refuses to advertise at all. I claim that if one city paper, of high standing, should make an effort to have a professional directory of medical and dental men, excluding the quacks and incompetents, society members exclusively of accepted standing, each with name and address, it would be a good thing for the paper, the public and the profession."

"Shall the man who has conducted himself in an unprofessional manner join the societies on an equal footing with the young man who is just entering practice and trying to conduct himself in strict accord with the code ethics? Will he not also conclude to advertise and when he has secured a practice become a society member? If we expect him to follow the straight and narrow path, the reward of improper conduct should not be the too easy admittance in the society."

We must not censure the custom of the profession before we were organized and recognized as a "profession." Many of our best men then advertized in a way that to-day is considered unethical. The times then were out of joint. We are professionally better now than then, and should behave better. —*Dominion Dental Journal.*

STUDENTS PRACTISING DENTISTRY.—There should be a severe example made in the colleges of the first student caught practising for free or reward on his own account. Such conduct in medicine or law is simply impossible, but in dentistry it has become a very general custom. Several cases have come under our own notice the last month, where second-year students had made full upper sets for five dollars "on the quiet," and for parties who where quite well able to patronize regular licentiates. In fact, the custom has become such a fad that the rooms of some of these students in boarding-houses are unlicensed offices on a small scale, and a system of toothing for patients has even extended on the sly to the infirmary patients.

It is generally this class of students who degrade the profession by cheap fees when they get into regular practice. It is a fact, too, that we have some very indigent young men in the ranks. Their poverty is no crime, but unfortunately they imagine it ought to justify them in breaches of law. The common thief may as consistently use the same argument.—"Dominion Dental Journal."

FASTIDIOUS OPERATING.—If there be any one thing which a dentist should cultivate, it is delicacy and lightness of touch. Some dentists whom we have known go at their work like a miner with a pick-axe. They are rough, harsh, and their hand, whether with the excavator, the plugger, or engaged in adjusting the various appliances of our art, is ever heavy. Their arms always rests burdensomely upon the patient's head. Their finger-nails are continually digging into tender tissues and there is a coarseness and clumsiness about their operations that marks an unpardonable heedlessness of the comfort of the patient. There are few things which so forcibly commend an operator to those under his care as tenderness and even daintiness, in regard to their sensibilities. The engine bur should be directed as if it were a sentient thing, and napkins should be used as though they were a spontaneous production.—Editor, in *Practitioner.*

MAY, 1897.

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"Dr. Garretson begs to acknowledge Messrs. Snowden and Cowman's kindness in sending him Prof. Gorgas' 'Questions and Answers.' The work of compilation is admirably done, and there can be no doubt that students will make large use of the books as aids to preparation for graduation examinations. Practitioners should find in them hints directing to free and wide reading. Dr. Garretson asks that his compliments and congratulations be given to Prof. Gorgas." From DR. JAMES E. GARRETSON, Prof. of Anatomy and Surgery, and Dean of Philadelphia Dental College.

"We will place the 'Questions and Answers' before our students, and call their attention to them, as we believe they are a good thing, not only for Students, but for older members of the profession." From Profs. L. P. HASKELL, President, and A. M. MARKLE, Vice President, The Haskell Post Graduate School of Prosthetic Dentistry, Chicago, Ill.

"I think all of the work will meet with approval everywhere."
W. H. WHITSLAR, M. D., D. D. S., Secretary, and Prof. of Dental Anatomy and Pathology, Western Reserve University Dental Department.

"The work will be a valuable one for students, and should be used in all our Colleges. I Will recommend the work to our students, and suggest that each one provides himself with a copy. Prof. J. TAFT, Dean of University of Michigan, College of Dental Surgery.

"They are the best books of the kind I have seen, and I am recommending students to purchase them." FRANK ABBOTT, M. D., Prof. and Dean of New York College of Dentistry.

"Everything coming from the pen of Prof Gorgas is always good, and I shall take pleasure in recommending the work for the use of the student."
Prof. A. O. HUNT, Dean and Professor of Metallurgy, Dental Prosthesis, and Supt. of Clinics Dental Department of State University of Iowa.

Artificial Teeth

OF HIGH GRADE,
AT MODERATE PRICES.

Equal in Strength

AND

Size of Pins to Any.

LARGE VARIETY OF

COLORS, SHAPES,
SIZES AND FORMS.

MANUFACTURED BY **GIDEON SIBLEY,**

PHILADELPHIA. CHICAGO.

SIBLEY'S

Insoluble Cement.

GUARANTEED

To be harder and less soluble than any other American, French or German Cement. If not, return it.

MADE IN FOUR COLORS:

No. 1, light; No. 2, medium; No. 3, yellow; No. 4, blue.

PRICES:

1 color,	$1.50
2 colors,	2.00
4 colors,	3.00

MANUFACTURED BY **GIDEON SIBLEY,**

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SIBLEY'S WHITE . . . . ALLOY

This alloy has been placed upon the market after a series of long experiments.

OUR AIM has been to excel all other Alloys in all points of merit, which aim we have accomplished.

IT IS WHITER than any other.

IN EDGE STRENGTH it has no equal.

Does not Shrink

Nor does it Expand

Neither will it Discolor.

If you are looking for a white alloy with superior points of merit Sibley's will suit you.

PRICES.

1 oz., $3.00; 2 ozs., $5.50; 4 ozs., $10.00; 10 ozs., $22.50.

Sibley's Felt Gold

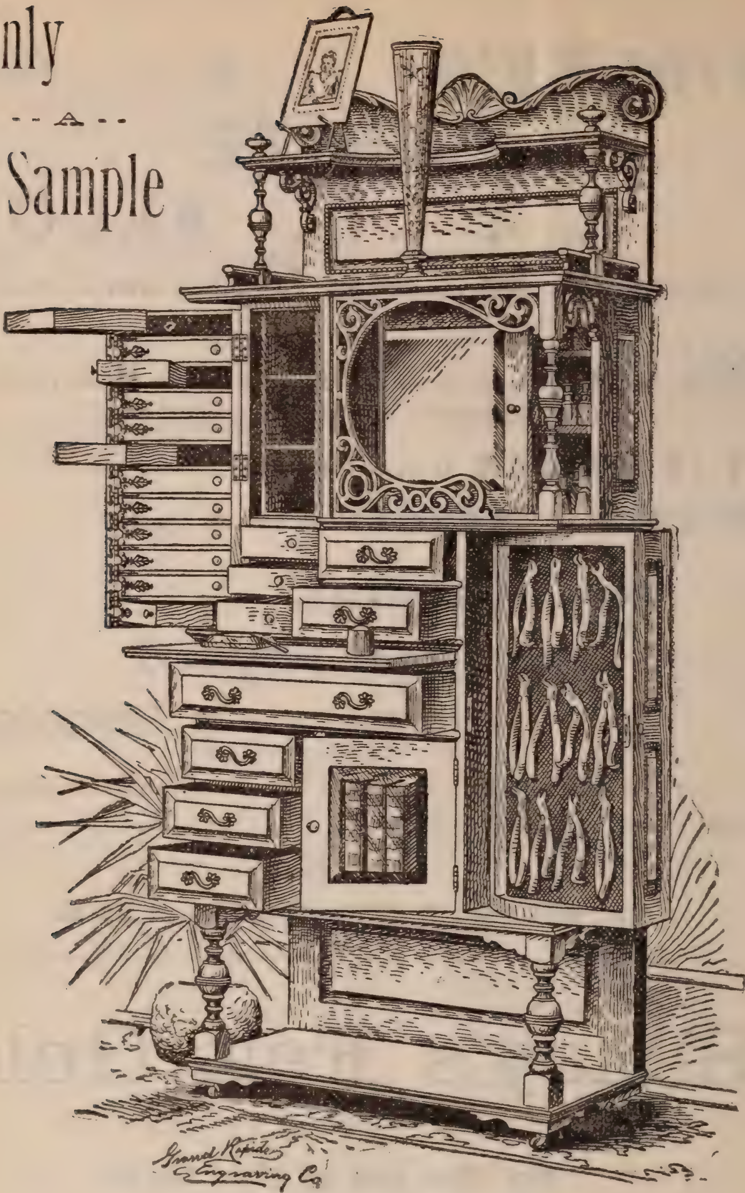
By the use of this form of Gold better work is accomplished in half the time than with any other form of Gold.

Give it a Trial . . . .

Only

-- A --

Sample



No. 75 Cabinet Patented Dec. 4th, 1894.

of our line of Dental Cabinets, but its our best seller. Quartered Oak, lined with Mahogany, bright gilt trimmings, beautiful when closed, convenient when open. **$75.00**

Our cabinet circular will show you many styles, and its had for the asking.

The Ransom & Randolph Co.,

Dental Depot,

Toledo, OHIO

REDUCTION IN PRICES

—— OF ——

CAULK'S ALLOYS AND CEMENT.

PAR-EXCELLENCE ALLOY

from $3.00 to $2.50 per ounce put up in one ounce and one-half ounce packages, and in five ounce cans (filings) and five ounce bottles (shavings). Price per ounce $2.50, two ounces for $4.50, five ounces for $10.00.

WHITE ALLOY

for $4.00 to $3.50 per ounce put up in one ounce and one-half ounce packages. Price per ounce $3.50, two ounces $6.00, four ounces for $11.00.

DIAMOND CEMENT,

1 color from $1.00 to 75c per box.
2 " " $1.50 " $1.25 per box.
4 " " $2.00 " $1.50 per box.

Crown and Bridge-work Cement from $1.50 to $1.25 per box.

The Powder (any color) and Liquid of Caulk's Diamond Cement sold separately at 40c per bottle (from 50c).

L. D. CAULK,

OFFICE AND SALES-ROOM:

Physicians' and Dentists' Bl'dg., 1831 and 1833 Chestnut St., Philadelphia, Pa.

LABORATORY, CAMDEN, DELAWARE.

Artificial : : : :
. ˙ . ˙ . TEETH.

TO THOSE dentists who have for many years used and approved the teeth bearing the stamp of H. D. Justi, it might seem unnecessary to further advertise them, but for the information of the great number of young men who are annually entering the ranks of the Dental Profession, we wish to call attention to a few points in which we claim superiority for these teeth over all others : . .

IN FORM these will excel both in variety and in close imitation of nature, not only in her ordinary average styles, but also in what might be called her eccentricities of form and arrangement. . .

IN COLOR we have succeeded in most nearly securing that bony texture which is so distinct from the porcelain-glitter we see in so many artificial teeth, and in the delicate blending of the shade they are eminently satisfactory. . . . .

IN STRENGTH they have the highest degree possible consistent with maintaining the other qualities required. It would be quite possible to make teeth much stronger by disregarding beauty of form, and making a coarse, thick block, but this ought to be, and doubtless would be, at once rejected by both dentist and patient. . . .

IN ADAPTATION to the alveolar ridge, great care has been taken to meet every requirement, and finally we ask for the product of our factory only a careful criticism and fair trial to convince the profession that we are fully justified in the superiority we claim for it.

H. D. Justi & Son,

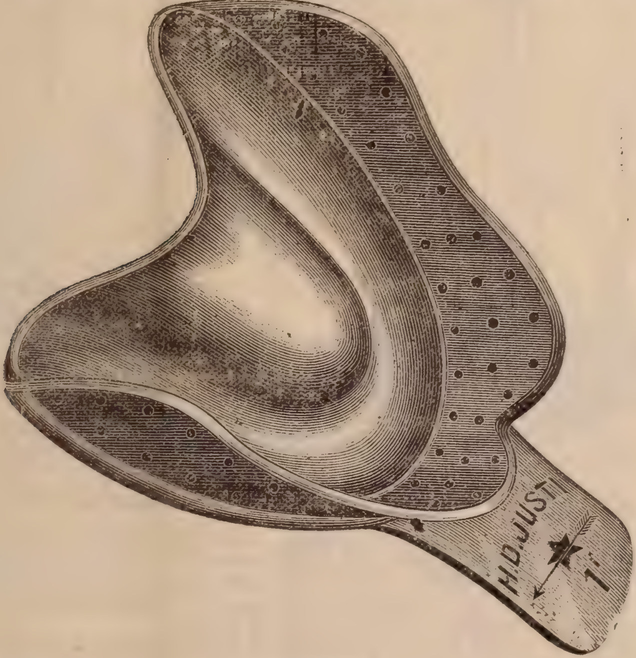
PHILADELPHIA,
1301 and 1303 Arch Street.

CHICAGO,
66 Madison Street.

THE WEIRICH

New Flexible

RIM IMPRESSION TRAYS.



[PATENTED.]

WHILE plaster impressions are acknowledged to be the only reliable ones, every dentist has found a serious difficulty in obtaining them, owing to the tendency of the plaster on the outside the maxillary ridge to break away when the impression is withdrawn from the mouth. This usually breaks into small pieces, always difficult and often impossible to replace. From this cause sometimes several impressions have to be taken before one sufficiently perfect for use can be obtained.

In the New Tray this trouble is removed. The plaster is mixed and applied in the usual way; when withdrawn it will break away, but the pieces, adhering to the rubber, will come directly back into their proper places, and the impression can at once be brought into perfect shape. This result is obtained by making the rim of the Tray of rubber, as shown in the cut. This rubber is fastened in a groove in the base of the Tray, and is sufficiently rigid to support the plaster while taking the impression, and yet flexible enough to permit the impression to be withdrawn without difficulty.

These upper Trays are five sizes, No. 1, the largest, being the same as the common No. 1 Tray; the others are evenly graded to No. 5, which is small enough for any case likely to be presented.

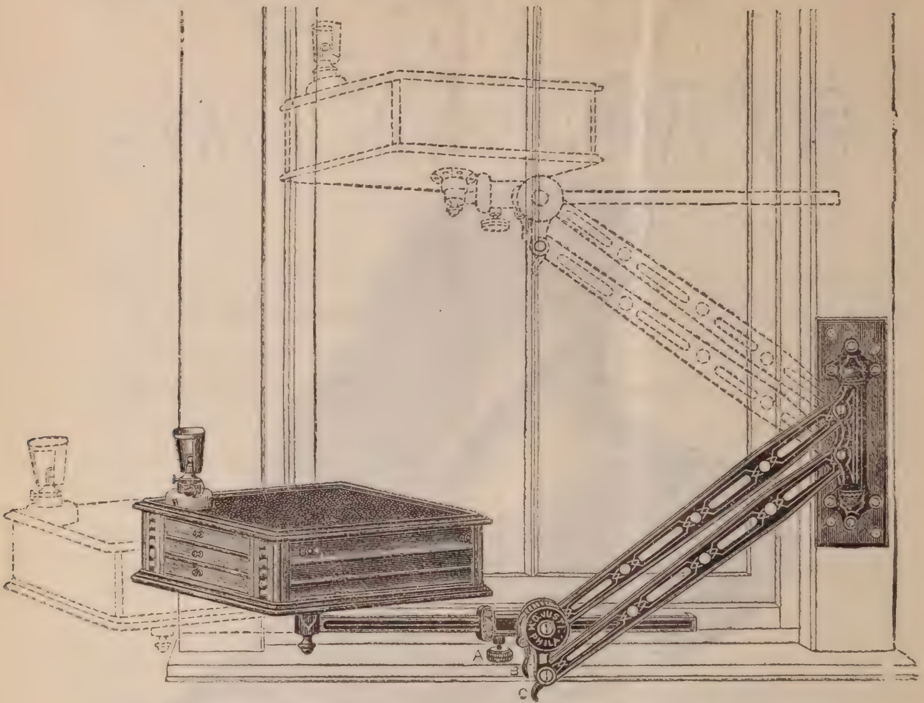
This invention has been tried by a number of dentists, and pronounced a great success, saving them much annoyance and trouble, and giving them far more perfect results.

PRICE...each, $0.75

H. D. JUSTI & SON,

PHILADELPHIA: ***CHICAGO:***
and 1303 Arch St. **66 Madison St**

The HANDY BRACKET.



The success which this Bracket has achieved and the universal popularity and demand for it, has far exceeded our highest expectations; having made a number of improvements since its original introduction, we considered it essential to give a new illustration of it as it is now made, accompanied by the Grigg Table.

The Bracket being so well known and fully described before we deem it unnecessary to repeat, but wish only to add, that when we stated this Bracket to be one of the most convenient ever placed on the market, we were not wrong in our assertion, as its great sale has since demonstrated.

PRICES

Handy Bracket with Table No. 1, ...	$12,00
" " " " No. 2, Lamp and Shield, . .	14.00
" " " Grigg Table, " " " . . .	24.00
" " " Allen " Plain Sides, Lamp and Shield,	18.00
" " " " " Glass " " " " .	21.00
Small Table No. 1, covered with Cloth or Leather, ...	3.00
" " No. 2, " " " " Lamp and Shield,	5.00
Allen " Plain Sides " " " " " " "	9.00
" " Glass " " " " " " " "	12.00
Grigg " covered with Cloth or Leather, Lamp and Shield,	15.00

H. D. JUSTI & SON,

PHILADELPHIA, - - CHICAGO,

1301 and 1303 Arch St. · 66 Madison St.

DIRECTIONS FOR USE OF

BLAIR'S VAPORIZER

FOR THE TREATMENT OF PULPLESS TEETH.

1. If possible, always adjust rubber dam, or usual method of keeping tooth dry. Never use a broach or drill in canal until treated with vaporizer.

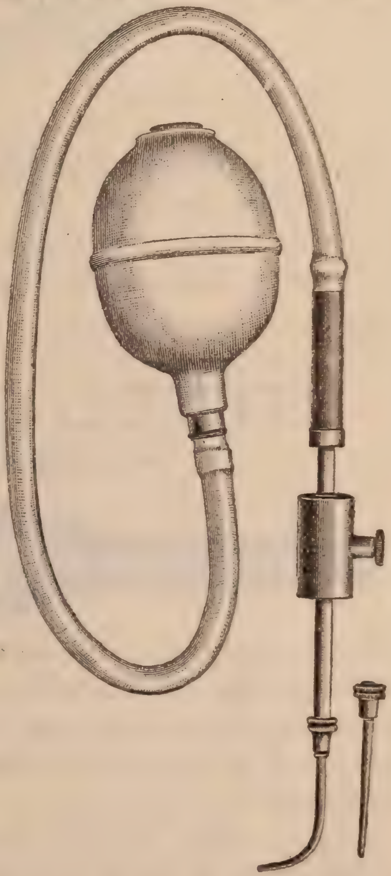
2. Clean out pulp chamber and expose openings of nerve canals ; then introduce one of the points in opening of canal, and force the gas generated in the vaporizer into the canal until the root is saturated with the gas. Clean out canals thoroughly when possible, then treat again and fill immediately, if there is no indication of pus coming through the end of roots.

3. If there is a blind abscess in the tooth, stop up lightly with cotton and have patient return on third day. Three treatments will generally cure any case of blind abscess.

4. If there is a fistulous opening, try and force gas through same. One application is often all the case will require.

Open screw top on vaporizer and place small quantity of the iodoform (which accompanies each instrument) in chamber ; then heat sufficiently, not too hot, to cause a thin stream of vapor to issue, on pressure of bulb, from point of vaporizer needle. Then insert in canal and force gas into same.

This gas will penetrate to every point in the canal and will absolutely destroy every vestige of animal life.



PRICE, EACH, $3.50.

MORRISON BROS., Sole Agents,

NASHVILLE TENN.

Hawe's Moulding Flasks.

Fig. 1.

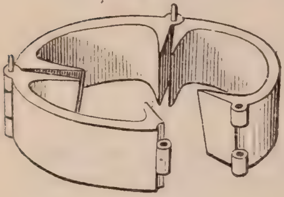


Fig. 2.

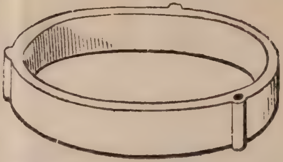


Fig. 3.

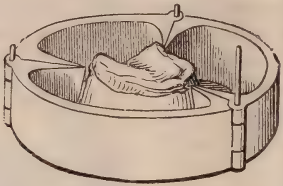
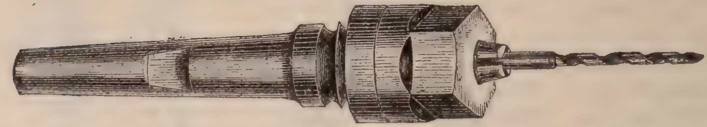


Fig. 1 represents the lower section of the Flask, slightly opened, to show the Joints. Fig. 2 is the upper section. When ready for use, the lower section is closed and confined by a Pin, and the Plaster Model placed in it, as represented in Fig, 3.

Price - - - - - $3.00

STEEL CHUCK.

PATENTED.



The above cut represents a very complete SELF-CENTRING, THREE-JAWED STEEL CHUCK, carefully made, durable and convenient. The wearing parts are hardened ; the jaws have a good bearing on the drill, and hold securely either a straight or tapered shank.

It carries Drills, Burs, or Corundum Points of the DENTAL ENGINE, one-eighth of an inch in diameter, and under, and made to fit our AMATEUR, UNITED STATES SHORT SPINDLE AMERICAN SHORT SPINDLE, and HAND and FOOT LATHES.

Price, with Wrench, - - - $2.00.

REDUCED PRICES

OF

Dental Machinery of Our Own Design.

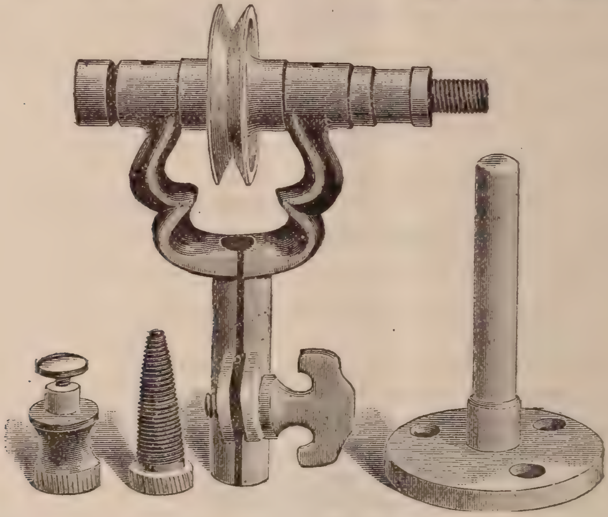
Amateur Lathe—Complete,	$25 00
“ “ Head, &c. all above stand,	13 00
“ “ Stand and Cord,	13 00
United States Lathe—Long Spindle,	15 00
“ “ “ Short Spindle,	15 00
“ “ “ Stand and Cord,	11 00
American Lathe,	14 00
“ “ Extra Large Driving-Wheel,	15 00
Diamond Lathe—Complete,	13 00
“ “ Fly Wheel,	7 00
Fly-Wheel No. 1,	7 00
Portable Hand or Foot Lathe—Complete,	5 50
“ “ “ “ Without Foot Attachment,	5 00
Quadrant Hand Fly-Wheel Lathe,	4 50
Hand Fly-Wheel Lathe,	4 50
Hand Lathe,	4 00
Diamomd Lathe Head—Polished Brass,	6 00
Socket Table Head,	4 50
U. S. Table Head—Holes in base to screw to table,	4 00
Engine Lathe Head—Nickel Plated,	4 00
American Lathe Head—Holes in base to screw to table,	4 00
Ladles and Handle—Two Ladles and one Handle,	75
Extension Brackets—Weight only five pounds,	6 00
Patent Portable Head-Rest—Nickel Plated,	10 00
Portable Head-Rest—Weight only four pounds, Bright Parts Nickel Plated,	4 50
Soldering Lamps,	90
Flask Presses—Well made and very strong—No. 1 Old Style,	1 50
“ “ “ “ “ “ “ No. 2 New Style,	1 50
Ingot Moulds—Broad base with handles, No. 1,	2 25
“ “ “ “ “ “ No. 2,	2 75
“ “ “ “ “ “ No. 3,	3 25
Bailey's Moulding Flasks—Per set of 2,	75
Steel Chuck,—to fit our Amateur United States, American, Short Spindle and Hand and Foot Lathe,	2 00
Welch's Nerve Paste,	1 00
Britannia Impression Cups—long handles, various styles and 29 sizes--each,	25

☞ **We make no charge for Boxing any of the above goods.**

SNOWDEN & COWMAN MFG. CO.

9 West Fayette Street, Baltimore, Md.

ENGINE LATHE HEAD FOR BRIDGE AND CROWN WORKERS.



THIS LATHE HEAD CAN BE ATTACHED TO SHAW ENGINE BY SLIPPING SOCKET OVER STANDARD AND TIGHTENING THUMB SCREW. IT IS VERY LIGHT AND NEATLY NICKEL PLATED. IT RUNS VERY SMOOTHLY AND LIGHTLY. IT ALSO CAN BE MOUNTED ON TABLE AS SHOWN IN CUT BY THE SMALL ATTACHMENT. . . . .

PRICE COMPLETE - - - $4.00.

VULCANIZERS

Our Own Manufacture.

WE ARE MAKING 3 STYLES.

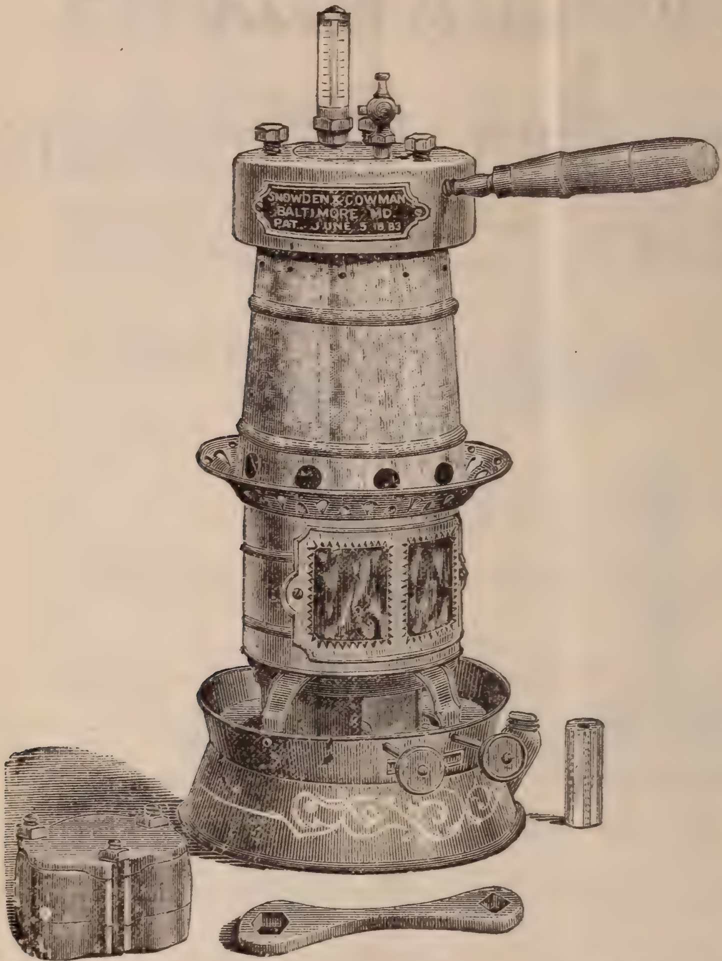
Complete with Coolidge's Gas and Time Regulator, . . .	$25 00
Complete with Gage and Blow-off Cock for Gas or Kerosene, ...	21 00
Complete with Thermometer and Blow-off Cock for Kerosene or Gas, ...	18 00
Vulcanizers complete with Two Brass Flasks, instead of Iron Flasks, adds	1 50
Vulcanizers complete without Two Iron Flasks, deduct	1 50
Vulcanizers complete, less Kerosene Stove, deduct . .	1 70
Vulcanizers complete, less Gas Stove, deduct	1 00
Large Iron Flasks, each	1 00
Large Brass Flasks, each	1 50

SNOWDEN & COWMAN MFG. CO.

9 W. Fayette Street, BALTIMORE, MD.

SNOWDEN & COWMAN MFG. CO.'S

New Patent Vulcanizer.

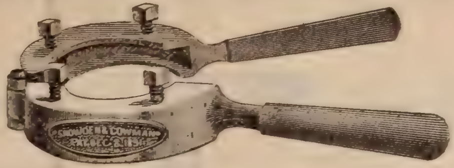


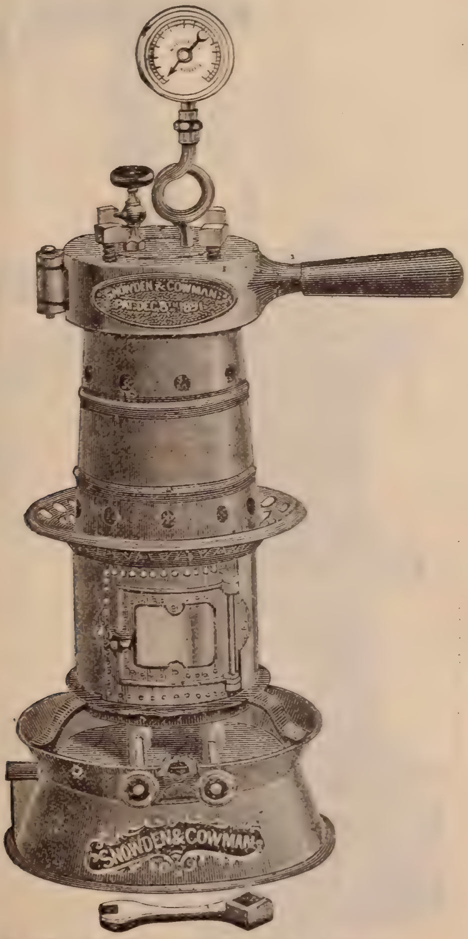
Complete for Kerosene or Gas, with Two Large Malleable Iron Flasks, ***$18.00***

Gas Stove.

PATENTED DEC. 8, 1891.

Snowden & Cowman Mfg. Co.'s Hinged Clamp Vulcanizer.

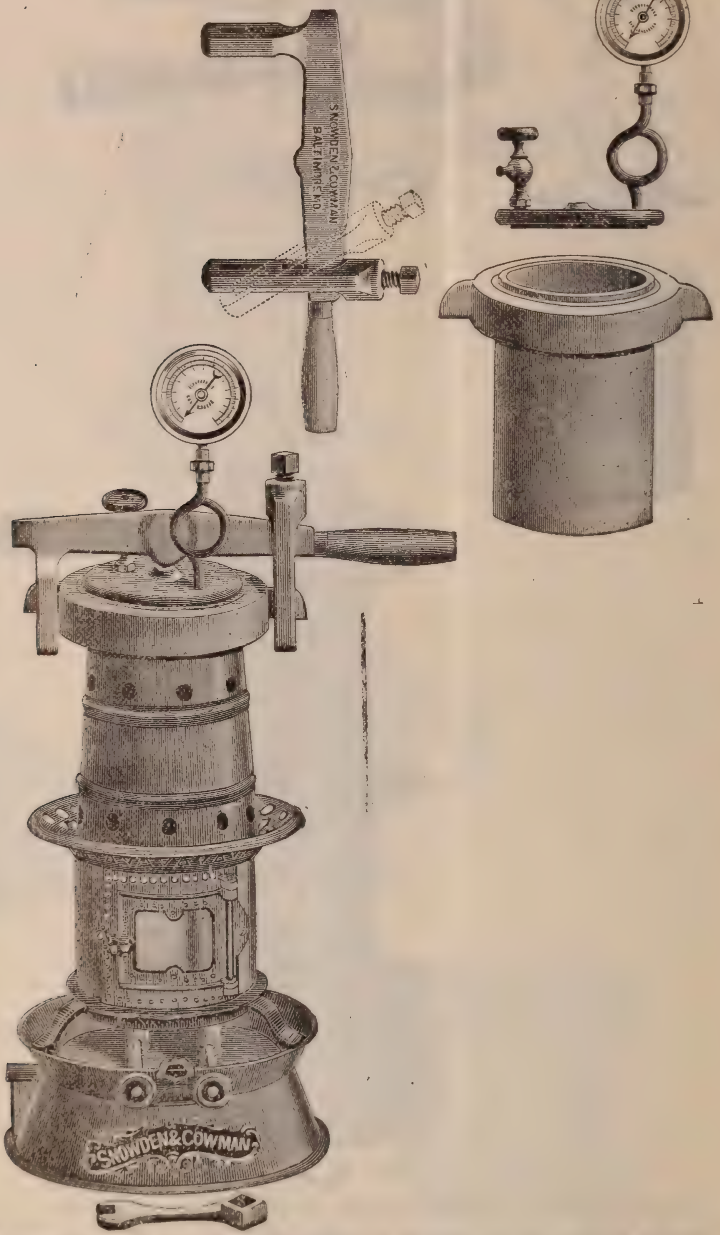




Price complete with 2 Flasks Improved for Gas or Kerosene with Guage as represented, ... *$21.00*
With Thermometer and without Guage, ... *18.00*

CIRCULARS ON APPLICATION.

Snowden & Cowman Mfg. Co.'s Improved Cross-Bar Vulcanizer



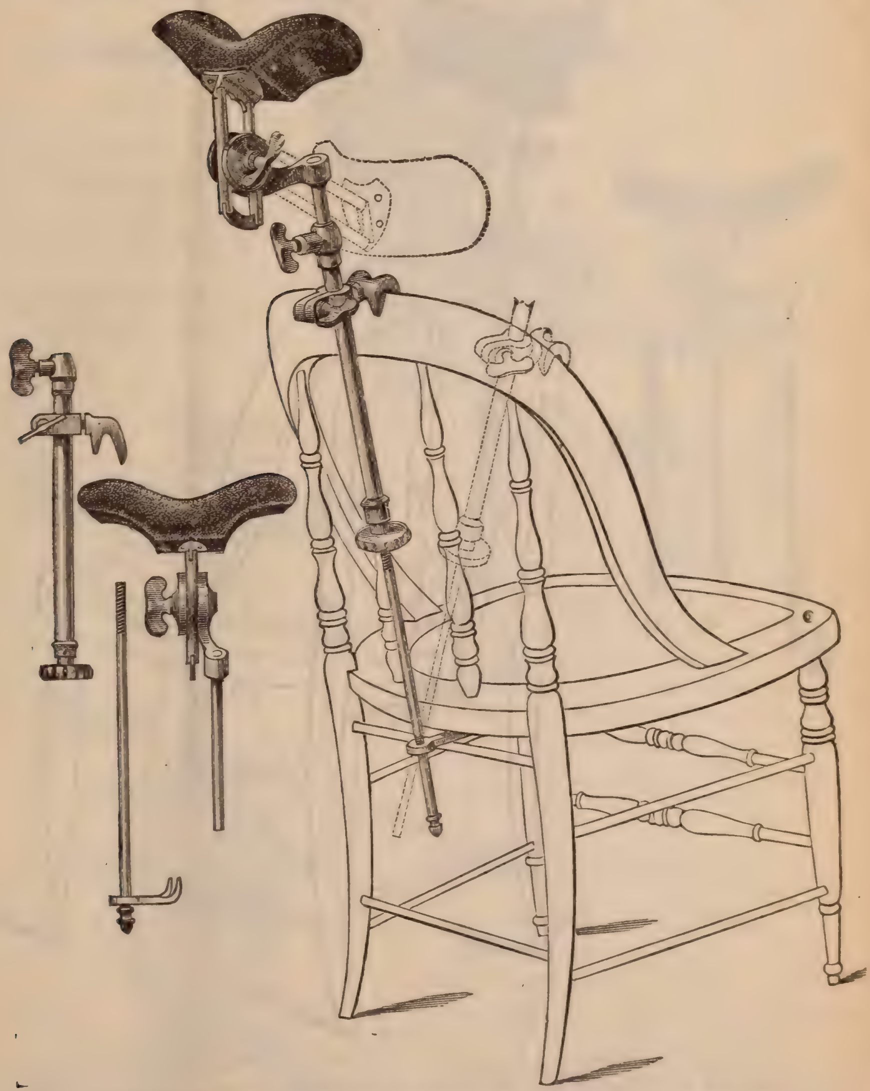
Price complete with two Flasks for Gas or Kerosene, with Guage as represented,	$21.00
With Thermometer and without Guage,	18.00.

CIRCULARS ON APPLICATION.

Snowden & Cowman Mfg. Co.'s

—NEW—

Portable Head-Rest.



PRICE, Full Nickel Plated, - - *$10.00*

—MANUFACTURED AND FOR SALE BY—

SNOWDEN & COWMAN MFG. CO.

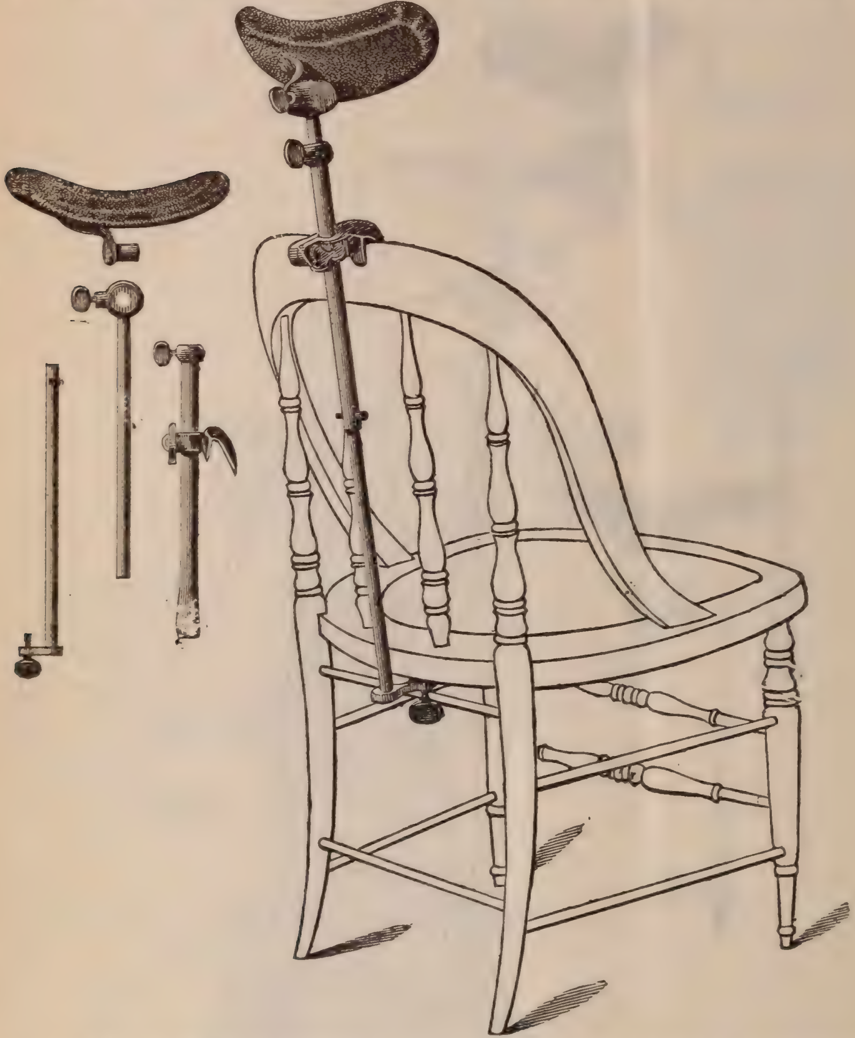
2- 9 West Fayette Street Baltimore Md.

Price Reduced

SNOWDEN & COWMAN MFG. CO.'S

IMPROVED-

Portable Head-Rest.

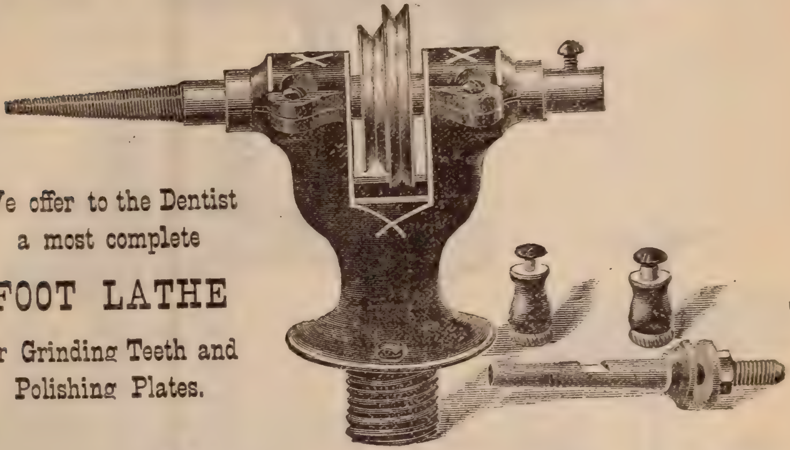


This Head-Rest can be attached to any chair, is very firm, and can be raised, lowered or moved backward or forward without interfering with attachment to the chair. Handsomely painted and bright parts nickel-plated.

It weighs only 4 lbs., and occupies a space only of 13 x 4 inches. PRICE, $4.50.

Price Reduced.

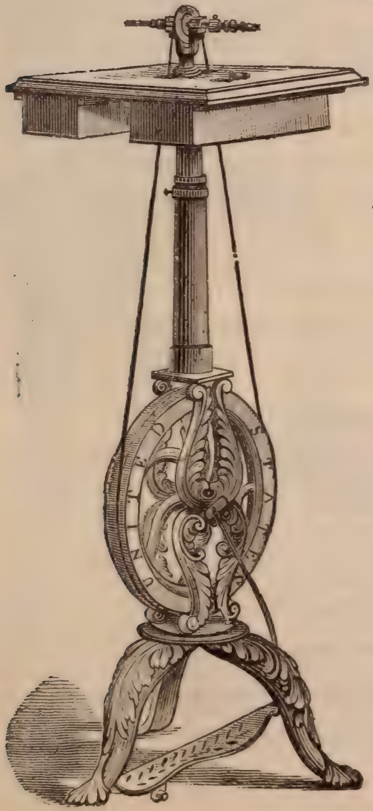
UNITED STATES LATHE.



We offer to the Dentist
a most complete

FOOT LATHE

for Grinding Teeth and
Polishing Plates.



It has been gotten up in a superior manner, great care having taken to make it durable and efficient. It has a movable column and table, which is capable of being elevated eight inches, to accommodate the operator in either a sitting or standing posture.

It can be packed in a box sixteen inches square, and can be set up in a few minutes, presenting a very neat and pleasing appearance, suitable for the office or laboratory. It is finished in bronze, and runs very light and steady.

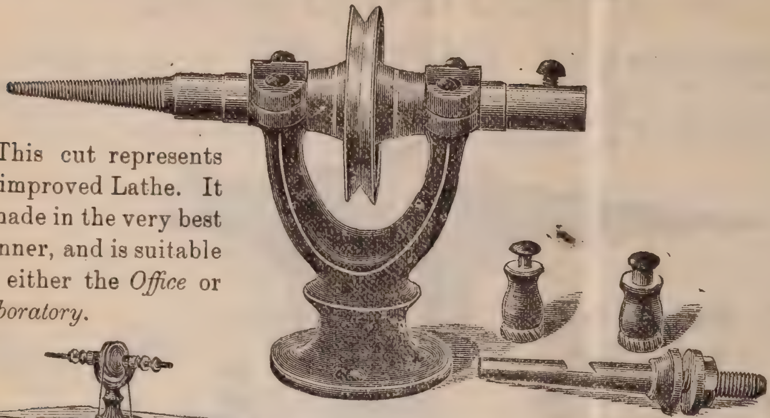
Price of Lathe complete with Short Spindle, as per cut,	$15.00
Price of Lathe complete with Long Spindle,	15.00
Price of Stand only, including Cord and and Coupling,	11.00

Snowden & Cowman Mfg. Co.,

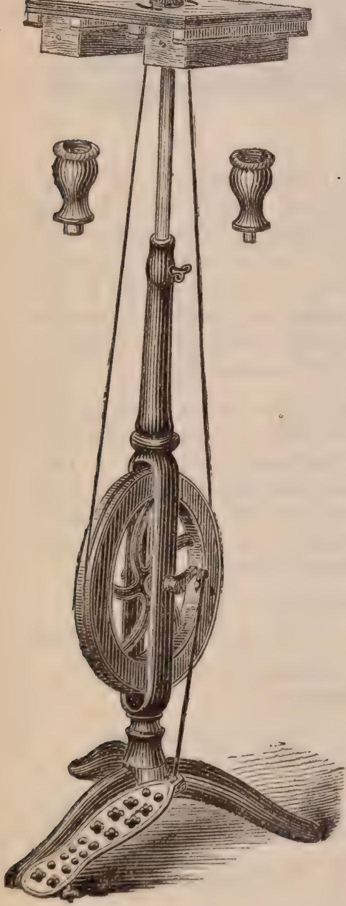
9 W. Fayette Street,

BALTIMORE, MD

AMERICAN LATHE, PRICE REDUCED.



This cut represents an improved Lathe. It is made in the very best manner, and is suitable for either the *Office* or *Laboratory*.



It has a solid spindle, one end of which is a taper screw for brush or felt wheels, and also, a space for a large corundum wheel. The other side of the spindle has a space for a large corundum wheel and a screw to receive the chucks, on which very small corundum wheels can be placed.

It has a movable column and table, which is capable of being elevated ELEVEN inches, to accommodate the operator in either a sitting or standing posture.

Either end of the spindle can be thrown towards the operator, if more convenient, by the set screw at the top of the column.

We also make for this Lathe a Socket Spindle—similar to our U. S. Lathe Short Spindle.

Price of Lathe, as per cut, with two Chucks, - - - -	$14.00
Price of Lathe, with Socket Spindle, with two Chucks, - -	14.00
Price of Lathe, with Extra Large Driving Wheel, - - -	15.00
Chucks, extra, - - - - -	.15

☞ No charge for Boxing.

SNOWDEN & COWMAN MFG. CO.,

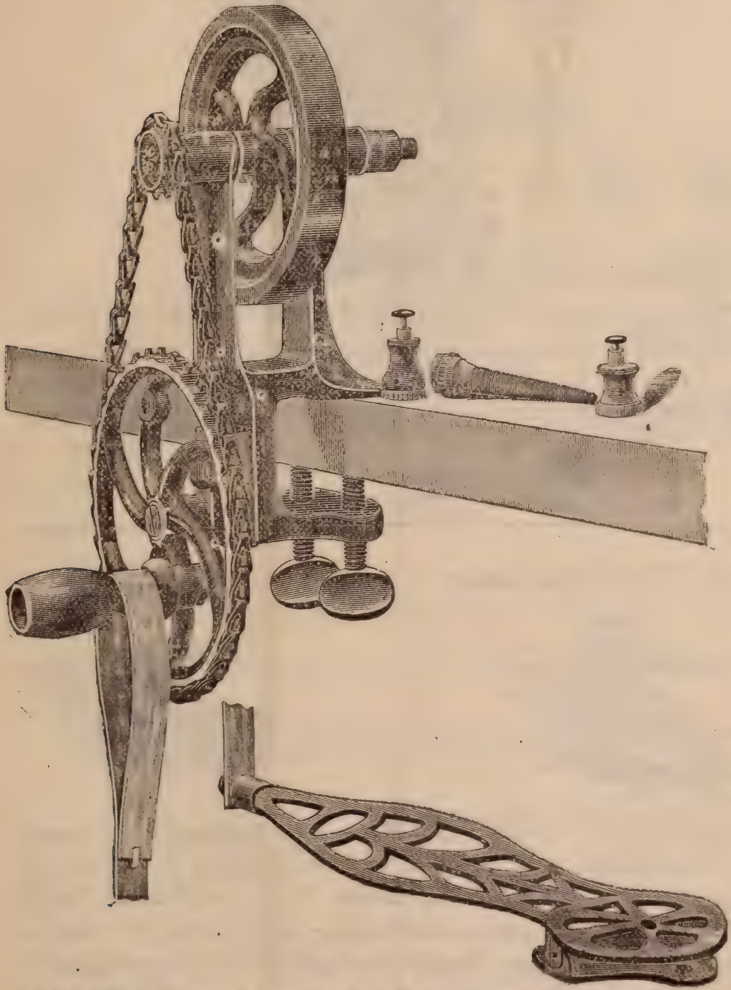
9 W. Fayette Street, Baltimore.

SOMETHING NEW FOR TRAVELLING DENTISTS.

LINK CHAIN LATHE,

TO BE USED EITHER BY HAND OR FOOT POWER.

PRICE, - $7.00.



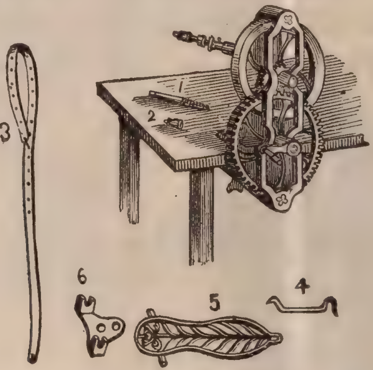
The Fly Wheel with Spindle is driven with an Endless Chain and makes very little noise, as it is propelled by large and small Sprocket Wheels, this gives it a very steady movement and does not require as much power as a geared lathe. It is fastened to table or bench by two Thumb Screws which make it impossible to turn when both are screwed up. It is very light and can be carried in a small satchell.

Snowden & Cowman Mfg. Co.,

9 W. Fayette Street, BALTIMORE, MD.

PRICE REDUCED.

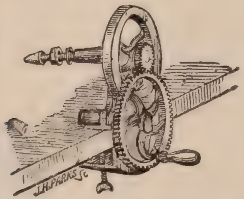
Portable Hand or Foot Lathe.



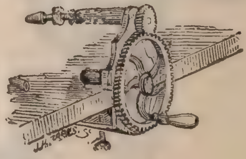
The above is a cut of a PORTABLE HAND OR FOOT LATHE, which is very efficient, manufactured for the traveling dentist; weighs under 7 pounds, and occupies the space of 6 by 9 inches. Members of the profession who have seen it pronounce it first rate.

Price, complete, - - - - -	$5 50
Without Foot Attachment, - - -	5 00

Hand Fly Wheel Lathe.



Hand Lathe.



HAND FLY WHEEL LATHE.—It is intermediate between the Hand Lathe, and the Hand and Foot Lathe; it weighs only three pounds and is a first rate Lathe. - - PRICE, $4 50

HAND LATHE.—It is small, strong and durable, and weighs only two and a quarter pounds; we have sold a large number of these Lathes,—giving great satisfaction. - • PRICE $4 00

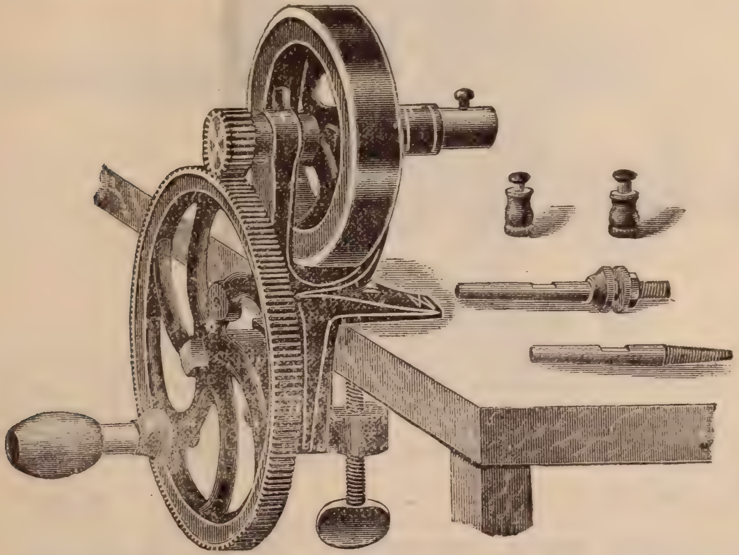
☞ All of the cog wheels of our Lathes are turned and cut on a machine, and are uniform, which makes them run true and with little noise.

SNOWDEN & COWMAN MF'G CO.,

No. 9 West Fayette St., Baltimore.

NEW HAND FLY WHEEL LATHE.

This Lathe is made larger and heavier and can be used with foot. It runs very steady and makes a good lathe for either Office Laboratory or to carry around. It is very neat.



PRICE, - - - - $5 00

" with Foot Attachment and Strap, 5 50.

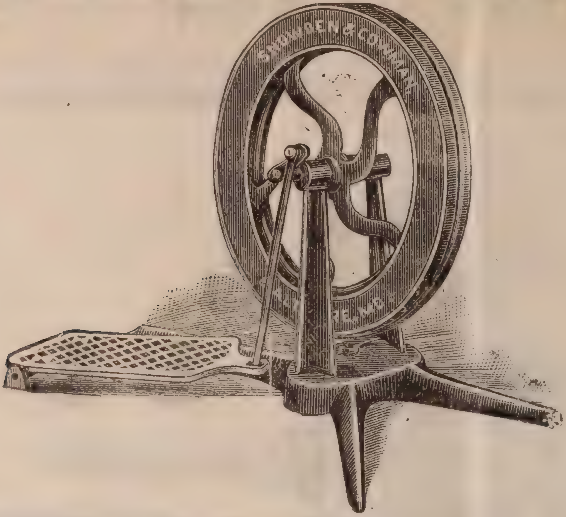
"The proof of the pudding is in the eating."

If the experience of dentists generally did not prove OUR GOLD AND PLATINA ALLOY a superior filling they would not be willing to pay nearly double more for it than the price of common amalgams. I suppose there is not another alloy or amalgam so generally used by our better class of dentists.

Welch's Alloy, 1 oz. $3.00; 2 oz. $5.50, 4 oz. $10.00; 10 oz. $22.00.
Welch's Amalgam, 1 oz. $2.00; 2 oz. $3.50; 4 oz. $7.00; 10 oz. $15.00.
Welch's Oxiphosphate, large $1.50; medium $1.00.
Liquids or powders, large 75 cts.; medium 50 cts.

T. B. WELCH, - - - - Vineland, N. J.

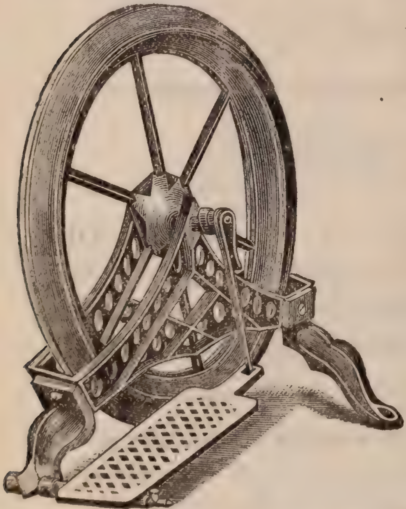
FLY WHEEL, No. 1, NEW.—Price Reduced.



This Fly Wheel weighs 30 lbs., with diameter of wheel 15 inches. The stand is the stiffest and steadiest of any driving wheel in the market. Owing to the position of the feet and the peculiar arrangement of the treadle, the wheel has an immense power and is very light running. In boxing remove pin that connects treadle with rod and fold treadle by side of the wheel. Weight complete, 46 lbs.

Price Boxed, - - - - - - **$7.00**

DIAMOND FLY WHEEL.—Price Reduced.



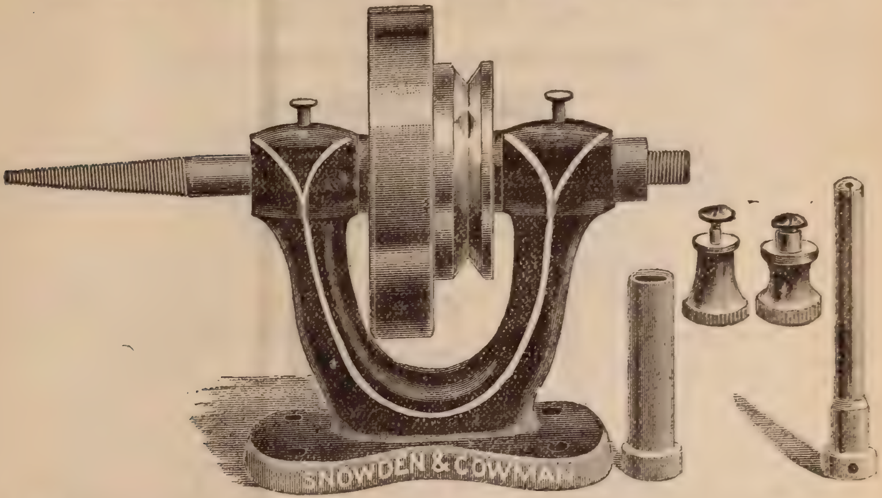
This fly-wheel is eighteen inches in diameter, with wrought iron spokes, in an iron frame, complete in itself, can be set any where, and runs very steady.

It has sufficient power and speed for any Dentist's Lathe Head. The feet are easily detatched, and all can be packed in a smaller box than any other Fly Wheel of its dimensions in the market.

Price Boxed, - - **$7.00.**

SNOWDEN & COWMAN MFG. CO.,
No. 9 W. Fayette Street,
Baltimore.

OUR NEW LATHE HEAD.



VERY SIMPLE AND EASY RUNNING.

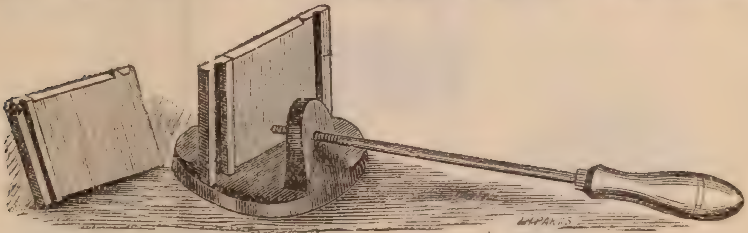
ADJUSTMENT QUICKLY MADE.

VERY DURABLE AND STEADY.

PRICE WITH 4 CHUCKS, - - - $5.00.

SNOWDEN & COWMAN MFG. CO.'S

INGOT MOULDS.



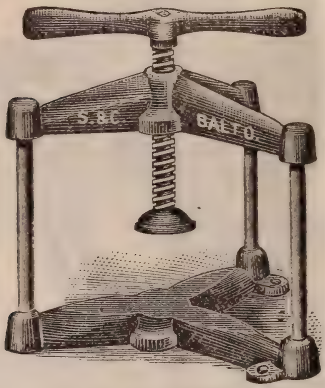
No. 1, will cast a plate from one half of an inch to two inches in width, also a round, half-round and square bar. -	$2.25
No. 2, will cast a plate from one half of an inch to two and three quarter inches in width, also a round, half-round and square bar. - - - - - -	$2.75
No. 3, will cast a plate 3 inches wide and 4 inches long also round, half-round and square bar, -	$3.25

LIBERAL DISCOUNT TO THE TRADE.

Snowden & Cowman Mfg. Co's

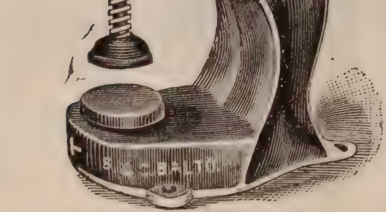
Flask Presses.

No. 1, Old Style Improved.



This Press is intended to close the flask after packing with rubber. It is of great advantage, saving screws and flasks. The upright rods are of wrought iron and the handle of the screw can be detached. They are *well made* and *very strong*, and has been made larger, so that it will take any Flask in the market. Price, - - - - $1.50.

No· 2, New Stvle.

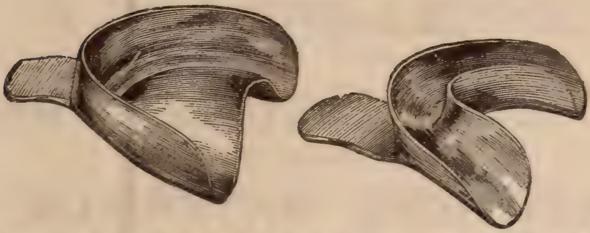


This Press is made of cast iron, very heavy, with steel screw and detachable handle. It has a Pivot Plate to level up the flask, insuring always a central pressure on the flask ; will take any flask in the market. Price - - $1.50

BRITANNIA IMPRESSION CUPS

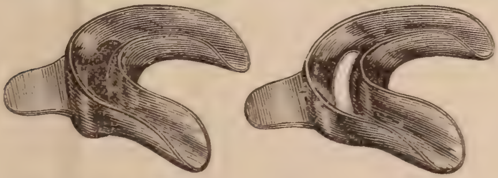
LONG HANDLES.

We Manufacture the following Sizes and Varieties:



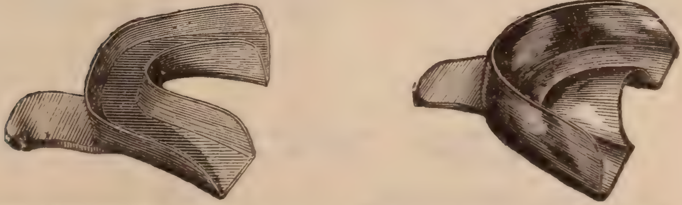
UPPER, Nos. 00, 0, 1, 2, 3, 4, 5, 6, 7.—(No. 00 is the largest size.)
LOWER, " 1, 2, 3, 4, 5. —(No 1 is the largest size.)

PARTIAL LOWER CUPS.



ENCLOSED CAVITY, Nos. 9, 10, 11.—(No. 9 is the largest size.)
OPEN CAVITY, Nos. 6, 7, 8. —(No. 6 is the largest size.)

UPPER AND LOWER CUPS.



PARTIAL UPPER—Flat Bottom, Nos. 8, 9, 10, 11—(No. 8 is the largest.)
FULL LOWER— " " " 12, 13, 14—(No. 12 is the largest.
PRICE............................Each....................25cts

SNOWDEN & COWMAN MFG. CO.
9 West Fayette Street, Baltimore Md

Dental Depot,

ESTABLISHED 1856.

SNOWDEN & COWMAN MFG. CO.

MANUFACTURERS OF

Lathes, Head Rests, Vulcanizers, Impression Cups, &c.

AND DEALERS IN

DENTISTS' MATERIALS,

No. 9 W. Fayette St., between Charles & Liberty Sts

BALTIMORE.

GOLD FOIL.

	Per 2 oz.	oz.	½ oz.	¼ oz.	⅛ oz.
Abbey & Sons,		$32.00	$16.00	$8.00	$4.
Valleau's		30.00	15.00	7.50	4.
Ney & Co's.		29.00	15.00	7.50	4.
S. S. White's, ¼ Century,	$58.00	30.00	15.00	8.00	4.
" " Globe,	58.00	30.00	15.00	8.00	4.
" " 1000 Fine,	58.00	30.00	15.00	8.00	4.
R. S. Williams, Cylinders, A,		30.00	15.00	8.00	4.00
" " " B,					
" " Rect. Pellets,					
" " Standard,					
Watt's Crystal,		32.00	16.00	8.00	4.00
E. Rowan & Co.		29.00	15.00	3.20 per 1-10 oz.	
" untrimmed,				5.60 per 1-5 oz.	
"				2.90 per 1-10 oz.	

TIN FOIL.

Ney & Co's—Nos. 4, 6, 8, and 10, - -	40 Cents per Book
S. S. White's, - - - - - -	30 " " "
Nos. 4, 6, 8 & 10, (extra tough)	40 " " "

SNOWDEN & COWMAN MFG. CO.,

No. 9 West Fayette Street Baltimore

PORCELAIN TEETH.

GREATLY REDUCED.

We keep on hand a large assortment of Teeth of the following Manufacturers, which we

SELL AT THEIR REDUCED PRICES.

The S. S. White Dental Manf. Co.'s

	Each.	$10 lots.	$25 lots.	$50 lots.	$100 lots.	$300 lots.
Plain Rubber & Plate Teeth	.12	.11½	.11	.10	.09	.08
Gum Sectional Rubber, Plain Plate, long Pins, Single Gum Rubber and Gum Plate Teeth,	.12½	.12	.11½	.11	.10	.09

H. D. JUSTI & SON'S.

	Each.	$10 lots.	$25 lots.	$50 lots.	$100 lots.
Plain Rubber and Plate,	.10	.09½	.09	.08½	.08
Gum Sectional Rubber, Plain Plate, Single Gum Rubber and Gum Plate,	.10½	.10	.09½	.09	.08½

Sibley's or Wilmington Co.'s Gum or Plain Teeth.

Per Set 14 Gum or Plain,	$ 1 00
11 Sets, " " "	10 00
29 " " " "	25 00
60 " " " "	50 00
125 " " " "	100 00

Less than Set of Fourteen Eight Cents per Tooth.

SNOWDEN & COWMAN MFG. CO.

DENTAL DEPOT

No. 9 W. Fayette Street.

AMALGAMS.

Townsend's	$1.75	per	ounce
Chicago Refining Co's	4.00	"	"
Caulk's Par-Excellent Alloy,	3.00	"	"
Caulk's White Alloy,	4.00	"	"
Lawrence's	3.00	"	"
Arrington's	2.00	"	"
King's,	3.00	"	"
Globe Alloy,	2.50	"	"
Alba "	2.50	"	"

CEMENTS.

Agate Cement, in 1 oz. Boxes,	$1.50
" " " ½ "	75
Weston's Insoluble Cement, one or two colors,	1.00
Dr. Flagg's Plastic Enamel, per Pk'g,	2.00
Fossiline, " "	2.00
Metcalf's Cement, " "	2.00
H. D. Justis's Insoluble Cement,	
1 oz. Package, 1, 2, 3, 4 Colors,	3.00
½ " " any above "	1.50
H. D. Justis's Acme Cement,	
Per Box,	1.00
Dr. T. B. Welch, & Son, Art. Dentine, per Pk'ge	1.50
" C. N. Pierce Phos. Zinc, " "	2.00
" T. O. Oliver's Oxy Phos, " "	2.00
" Smith's " Chloride, " "	1.00
Houghtons's Os-Artificial, " "	75
Poulson's Mineral Plombe, " "	2.50
Dawsons's Mineral Cement " "	1.50
Caulks's Diamond "	
Per Package, 2 Colors,	1.50
" " 1 "	1.00
J. Ogden Britten's Cement, 2 colors,	1.50

DENTAL RUBBER.

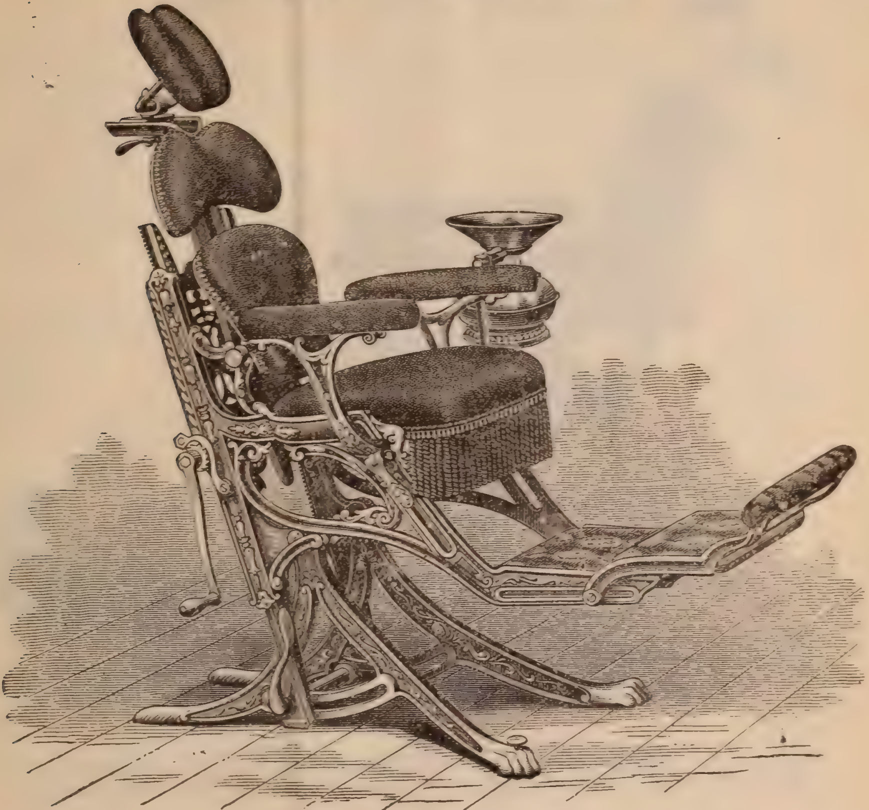
Ram's Horn Rubber,	per lb.	$2.25
" " " Pink	"	5.00
Sam'l S. Whites' No. 1 Improved,	"	2.25
Doherty No. 1,	"	2.25
" " 2,	"	2.25
Sam'l S. White's Bow Spring,	"	2.75
Black Rubber	"	2.50

GUTTA-PERCHA.

Ram's Horn,	per lb.,	$2.25
Sam'l S. White's	"	2.25

THE MORRISON DENTAL CHAIR.

Reissue May 15, 1877. English Patent Dec. 7, 1867.



PRICES.

In best quality Green or Garnet Plush or Plain Morocco . .	$100.00
In Real Morocco, Embossed	110.00
In finest quality Green or Garnet Plush, puffed and trimmed with Silk Plush, full Turkish Upholstery	120.00

The Illustration shows No. 4 Spittoon, No. 3 Bracket, No. 3 Socket, which are extra and add $8.00 to above price.

BOXING FREE.

STUDENT'S MORRISON CHAIR.

To meet an often-expressed want of a first-class chair at a low price, the Student's Morrison was brought out. It is, in all respects, equal to the regular Morrison chair, except that it is upholstered in a seal-brown corded material, instead of a plush. It presents a very neat appearance, and will wear nearly as well as plush.

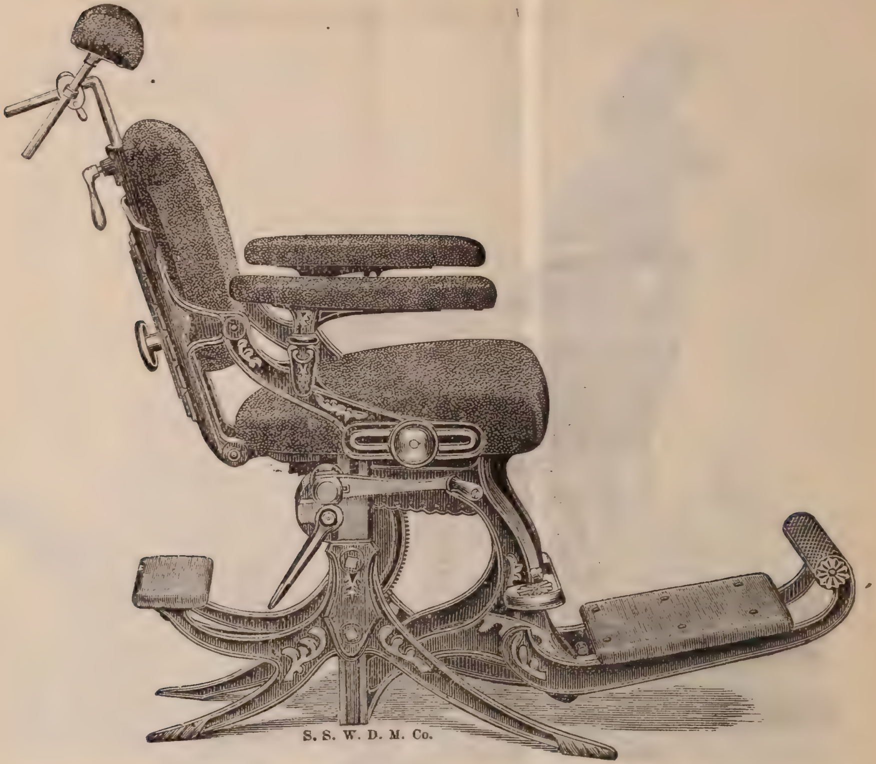
PRICE.

In Corded Upholstery.	$ 85.00

We supply either style of the Morrison Chair, with or without Casters When ordered with Casters, the price is $10.00 extra.

For Sale by Snowden & Cowman Mfg. Co., 9 W. Fayette St., Baltimore.

THE CYCLOID CHAIR



Patented December 28, 1875; July 3, 1877; November 20, 1877; March 9, 1880; May 22 1883. Re-issues July 4, 1876; March 19, 1878; August 27, 1878. Others pending.

This Chair was designed especially to meet a demand for a chair which, while affording a variety of essential movements, could be sold at a lower price than the Wilkerson, The S. S. White Pedal-lever, or the Morrison.

For those who want a low-priced chair which in facility of movements far surpasses anything heretofore offered for the money, the Cycloid is *the* chair. It is strongly built, and the finish and general appearance make it a desirable addition to a well-furnished office.

The lifting mechanism, which has a range of 10 inches, is entirely new and is worked with great ease and rapidity. Should the crank by accident slip from the hand the descend of the Chair is automatically arrested.

The arms are so arranged that they may be rotated out of the way of the operator and yet be of service to the patient.

The foot-board can be adjusted in four positions, and a permanent support for the foot of the operator is placed at the back of the base, the convenience of which will be obvious to those who are in the habit of using a "cricket."

Nearly all of the movements can be made with one hand while standing at the side of the Chair.

Price, upholstered in Corded Material, - -	$ 70.00
" " Best Quality Maroon or Green Plush,	85.00

For Sale by SNOWDEN & COWMAN MFG. CO.

Snowden & Cowman Mfg. Co.'s

DENTIST'S CASE BOOKS,

For Recording all Operations in Dentistry

WITH

TITLE PAGE, INDEX or ALPHABET, and the pages numbered, printed on fine paper with a DIAGRAM of the teeth at the top of each page, neatly and substantially bound in muslin.

PRICES.

One Quire Book,	$1 00
Two "	1 75
Three "	2 50
Four "	3 25

DENTISTS' BILL HEADS.

These Bill Heads are printed on fine paper with diagram of the teeth on each, in the following sizes:

No. 1.—Size, 8½ inches wide by 7 inches,	Price per 100,	$ 50
No. 2.—Size, 4½ inches wide by 7 inches,	"	40
No. 3.—Size, 8½ inches wide by 7 inches,	"	50

JOB PRINTING.

Having fitted up a Printing Office in our establishment, we are prepared to fill at the very shortest possible notice, orders for various kinds of Printing, such as

CIRCULARS, BILL HEADS, NOTE HEADS,
STATEMENTS, HEADINGS, LABELS,
ENVELOPES, CARDS, &c.

☞ Liberal Discount to the Trade.

PUBLISHERS OF

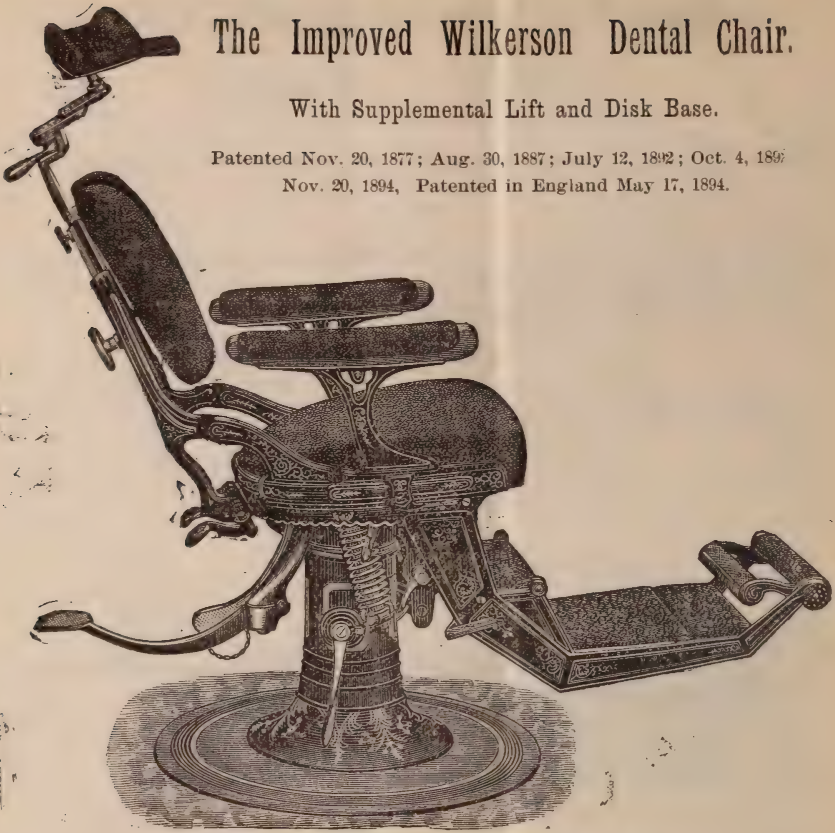
The American Journal of Dental Science,

$2.50 PER YEAR.

The Improved Wilkerson Dental Chair.

With Supplemental Lift and Disk Base.

Patented Nov. 20, 1877; Aug. 30, 1887; July 12, 1892; Oct. 4, 189
Nov. 20, 1894, Patented in England May 17, 1894.



LOWEST POSITION OF THE CHAIR.

Supplemental Lift for the Wilkerson Chair.

One of the most difficult problems in the production of a first-class dental chair has been to obtain the great range of vertical adjustment which is desirable to meet the needs of the dentist without incurring one or more objectionable complications, such as the cutting of the floor of the operating-room or the telescoping of the supports.

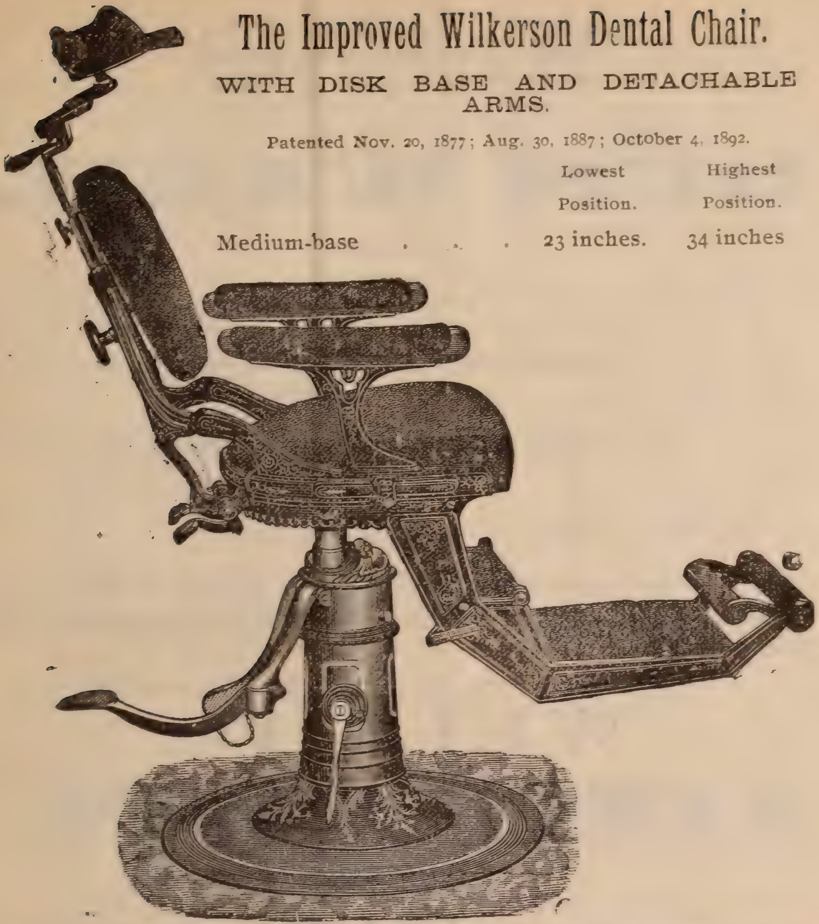
The Supplemental Lift, when placed upon the Low or Medium-Base Wilkerson Chair, enables us to meet this problem in a more satisfactory manner than anything hitherto offered.

When placed intermediate between the regular plunger elevating device and the body or frame of the chair, it is possible to lift the chair, before the patient steps in, either five or ten inches, after which the treadle elevating apparatus may be used, as before, thus in fact increasing the vertical range of the chair by the amount of the adjustment mentioned, ten inches.

The operation of the apparatus is simple, the weight of the chair body being almost perfectly balanced by springs, so that it may be raised five inches to the first notch; or through the entire range of ten inches, by lifting by the chair arm.

PRICES. The supplemental lift adds twenty-five dollars to the prices of the Disk Base chair as given on the opposited page.

For Sale by SNOWDEN & COWMAN MFG. CO.,
9 West Fayette Street, Baltimore.



The Improved Wilkerson Dental Chair.

WITH DISK BASE AND DETACHABLE ARMS.

Patented Nov. 20, 1877; Aug. 30, 1887; October 4, 1892.

	Lowest Position.	Highest Position.
Medium-base . . .	23 inches.	34 inches

To accommodate those who prefer the Disk Base we have added to our line of dental Chairs the Wilkerson in this style, as shown in the cut, and we are now ready to furnish the *medium range* Chair on the Disk Base.

The high and low range Chairs with Disk Base are now in process of manufacture and will soon be ready for delivery.

Prices of the Wilkerson Chairs, with either Disk or Leg Base, are the same.

In ordering chairs be particular to state if Disk Base is wanted ; if not specified, the regular form will be sent,

PRICES.

	Medium Base.
In Best Quality Green or Maroon Plush	$150.00
" Maroon Plain Turkey Morocco	150.00
" French Finish Maroon-colored Leather	150.00
" Seal	157.00
" Best Quality Green or Maroon Plush, puffed with Plush, trimmed with Silk Cord, with Wilton Capet .	170.00
" Embossed Turkey Morocco, puffed with plain Morocco, edged with Cord, with Carpet to match . .	180.00

Watkins Sectional Head-Rest adds ten dollars ($10.00) to the above prices.

BOXING FREE.

For Sale by SNOWDEN & COWMAN MFG. CO.,
9 West Fayette Street, Baltimore.

HARRIS'

GUM WASH.

This very pleasant and efficient Lotion has been found highly beneficial when applied to diseased gums after removing the causes of irritation; and in cases where teeth are sensitive from cold or the receding of the gums. Also, applied after extraction it allays pain and irritation.

NEATLY PUT UP IN THREE OUNCE BOTTLES.

3 oz. Bottles, each,	$ .25
3 oz. Bottles, per dozen,	2.75

Made from Formulae prepared by Dr. Chapin A. Harris and has been on the market for the past thirty-two years and endorsed by every dentist who has used it.

WELCH'S

NERVE PASTE.

This preparation is very certain in its action on the nerve, destroying it in less than twenty-four hours. It has the advantage of not causing pain or producing inflammation, with very rare exception. Also, it may be used with safety in cases of toothache that proceed from exposed nerve, and seldom fails to give relief in from five to twenty minutes.

DIRECTIONS.—Place a portion, of the size of a pin's head, in *immediate contact* with the exposed nerves, covering it carefully with wax, allowing it to remain twenty-four hours. A very minute portion placed in a cavity, in preparation for filling, will destroy its sensibility in four to six hours. The bottle contains sufficient for two hundred applications.

N. B.—If the paste should become dry, moisten it with creosote, or warm it until it is quite soft.

☞ If, after twenty-five applications, it does not give satisfaction, return the Nerve Paste and we will return the price.

For Sale by SNOWDEN & COWMAN MFG. CO.,
9 West Fayette Street.

FORCEPS.

We keep in stock a large line of selected forceps made from best quality of steel. Nickle Plated, Octagon Joint. Price per pair, - $2.25

Can supply any make or number from any catalogue at manufacturers' prices.

EXCAVATORS.

Octagon, Steel Handles, best quality, per dozen, nickel plated, - $2.00

ARTICULATORS.

From - - - - - - .90 to $4.00 each

RE-DISTILLED MERCURY.

Put up in four ounce vials, - - - - each .50

MODELLING COMPOSITION.

S. S. White's 1, 2, 3, 4, per pound,	75
Hood & Reynold's 0, 1, 2, 3, per pound,	75

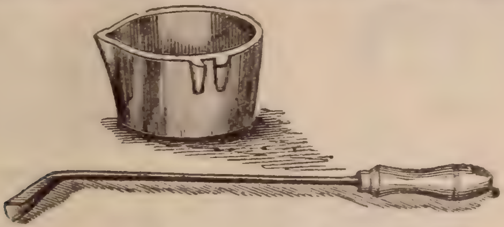
GUTTA-PERCHA FILLING.

The S. S. White M'f'g. Co's Pellets, per ounce, Put up in boxes containing ½, ¼, 1-10, 1-20 ounces.	$4.00
Caulk's Diamond Pellets, per ounce, Put up in boxes containing 1-4, 1-8 and 1-16 ounces.	$2.00

FOWLER'S TEMPORARY STOPPING.

Price per ounce, - - - - - - .50

Ladles and Handles.



We make three sizes of Ladles; one handle will fit each Ladle and is removed when the Ladle is placed on the fire.

No. 1, is 5 inches diameter, and 3 inches deep.
" 2, " 4¾ " " " 3 "
" 3, " 4½ " " " 2½ "

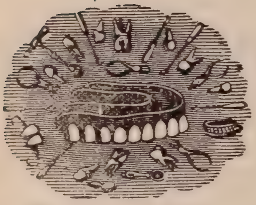
PRICE.—2 Ladles, (Nos. 2 and 3,) with 1 Handle	75
Nos. 2 and 3 Ladles, without handle, each	25
No. 1 large " " " "	40
Handles of wrought iron, each	25

SNOWDEN & COWMAN MFG. CO.,

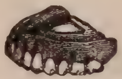
No. 9 W. Fayette St., Baltimore.

Dental Cuts---Electrotypes.

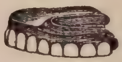
For Business Advertisements.



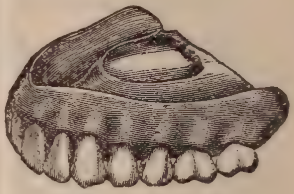
No. 1....60 cents.



No. 7.....40 cents.

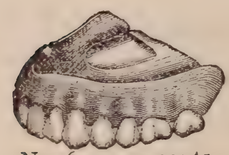


No. 4.....40 cents.

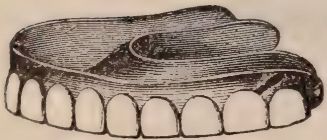


No. 2....75 cents.

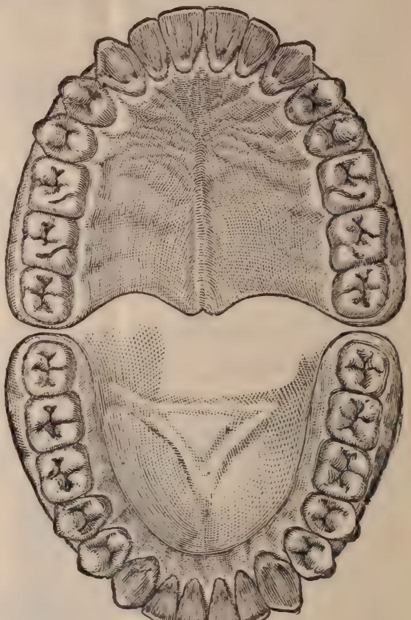
No. 3....40 cents.



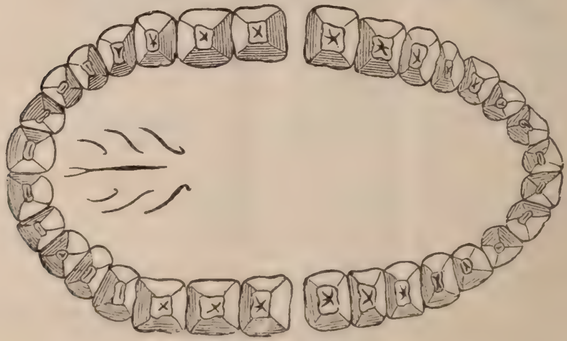
No. 6 ....55 cents.



No. 5....75 cents.



No. 9....$1.20.



No. 8....$1.00.

SNOWDEN & COWMAN MFG. CO.,
9 W. Fayette Street, Baltimore, Md

Gray's Glycerine Tonic Comp.

(Glycerine, Sherry Wine, Gentian, Taraxacum, Phosphoric Acid, Carminatives.)

Formula DR. JOHN P. GRAY.

Increasing demand is the best evidence that physicians and dentists are appreciating the Unique Value of this preparation.

It neutralizes acidity of the stomach, checks fermentation, and is unexcelled as a General and Nerve Tonic.

In Pulmonary and Bronchial affections, Nervous Prostration, Melancholia, Anaemia and Debilitated Conditions it has no superior.

THE PURDUE FREDERICK CO.,

Write for Samples. No. 52 West Broadway, New York.

NO MORE LOST MOTION !

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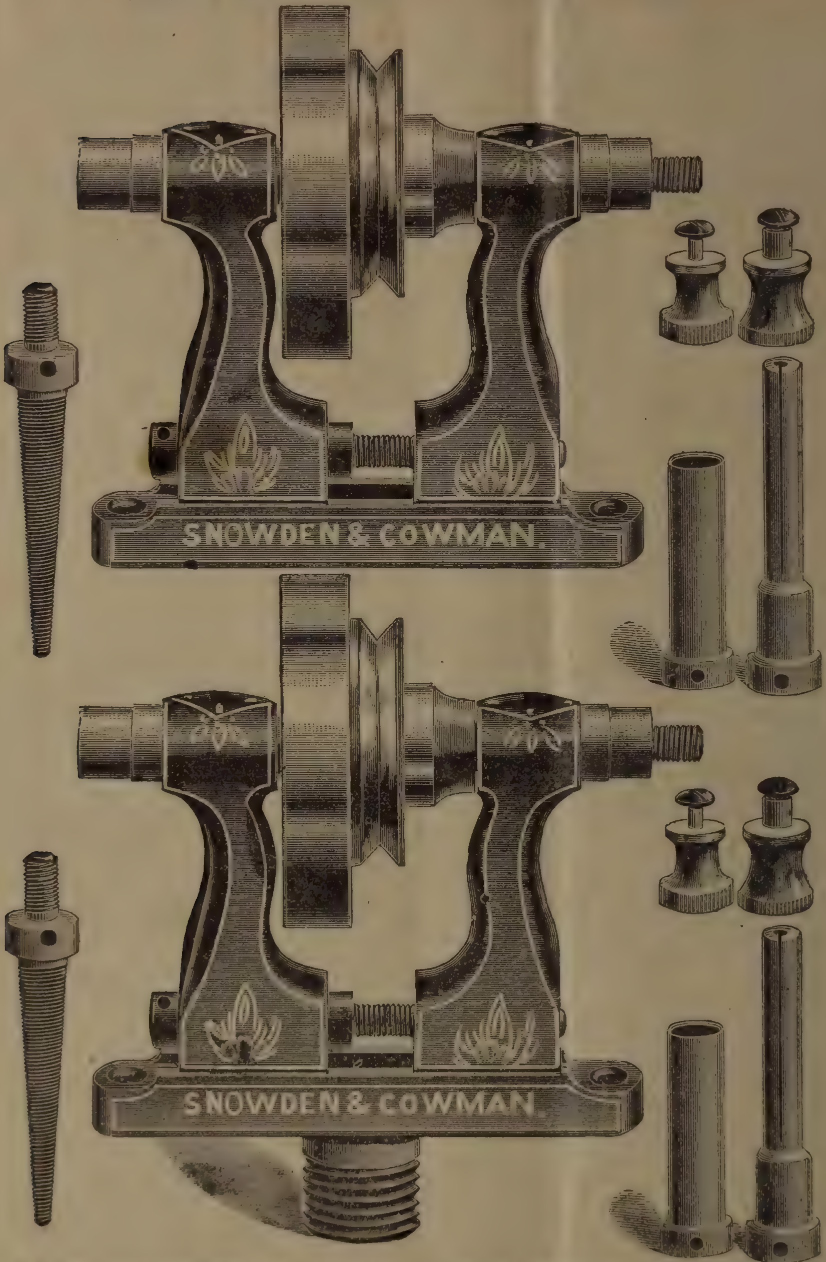

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THE AMERICAN JOURNAL OF DENTAL SCIENCE.

EDITED BY

F. J. S. GORGAS, M. D., D. D. S.
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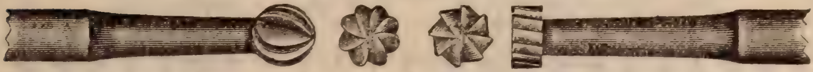

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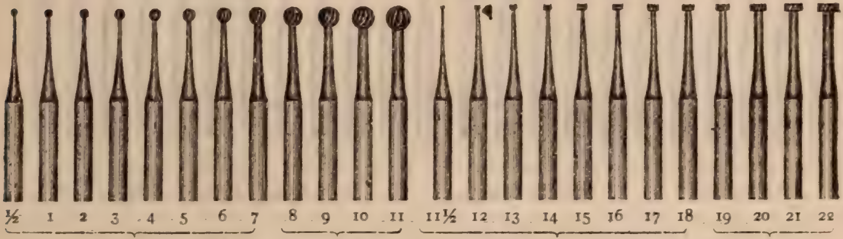

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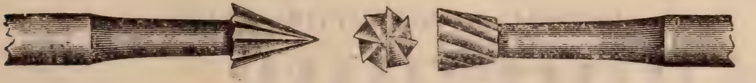

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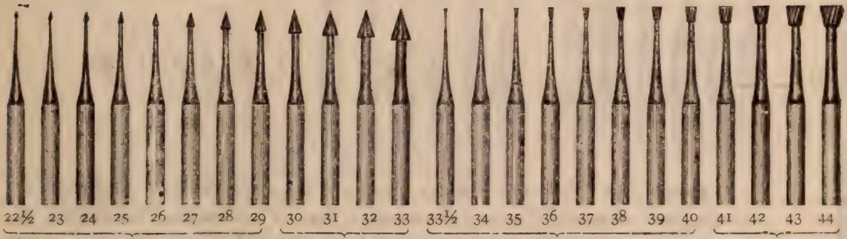

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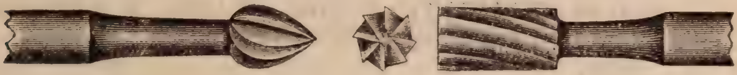

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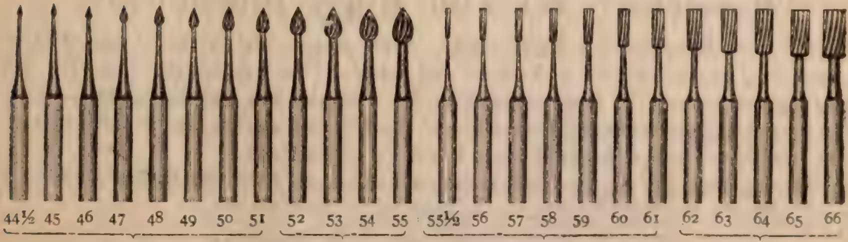

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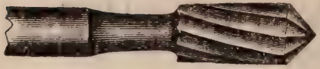

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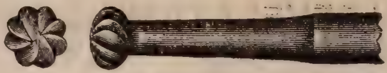

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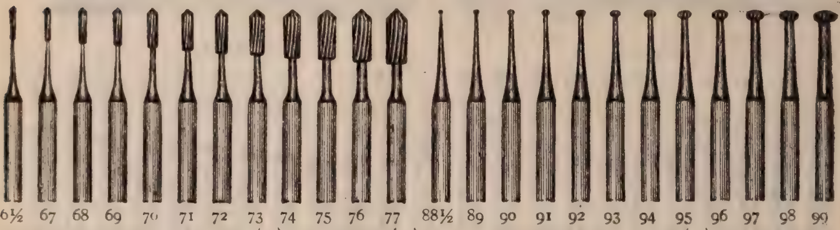

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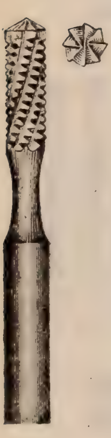

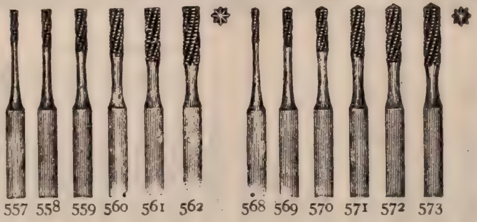

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Insoluble Cement.

GUARANTEED

To be harder and less soluble than any other American, French or German Cement. If not, return it.

MADE IN FOUR COLORS:

No. 1, light; No. 2, medium; No. 3, yellow; No. 4, blue.

PRICES:

1 color,	$1.50
2 colors,	2.00
4 colors,	3.00

MANUFACTURED BY **GIDEON SIBLEY,**
PHILADELPHIA, CHICAGO.

SIBLEY'S WHITE . . . . ALLOY

This alloy has been placed upon the market after a series of long experiments.

OUR AIM has been to excel all other Alloys in all points of merit, which aim we have accomplished.

IT IS WHITER than any other.

IN EDGE STRENGTH it has no equal.

Does not Shrink

Nor does it Expand

Neither will it Discolor.

If you are looking for a white alloy with superior points of merit Sibley's will suit you.

PRICES.

1 oz., $3.00; 2 ozs., $5.50; 4 ozs., $10.00; 10 ozs., $22.50.

Sibley's Felt Gold

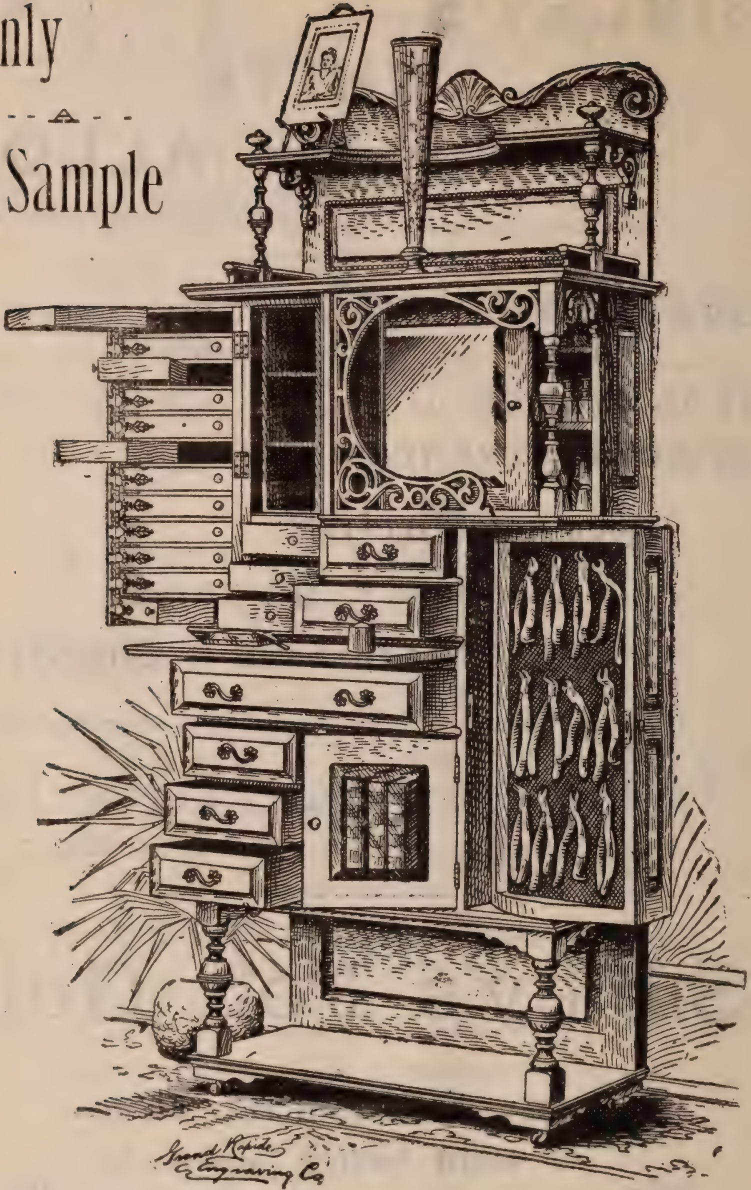
By the use of this form of Gold better work is accomplished in half the time than with any other form of Gold.

Give it a Trial . . . .

Only

- - A - -

Sample



No. 75 Cabinet Patented Dec, 4th, 1894.

of our line of Dental Cabinets, but its our best seller. Quartered Oak, lined with Mahogany, bright gilt trimmings, beautiful when closed, convenient when open. **$75.00.**

Our cabinet circular will show you many styles, and its had for the asking.

The Ransom & Randolph Co.,

Dental Depot,

Toledo, OHIO.

REMEMBER THIS FACT - - -

THAT

CAULK'S SPECIALTIES,

Alloys, Cements and Gutta Perchas

Need no introduction to the profession, as they have been before you TWENTY years.

THEY RANK FIRST AS YOU KNOW.

OBTAINABLE AT YOUR DEPOT.

L. D. CAULK,

1831-1833 Chestnut Street, - - - PHILADELPHIA, PA.

LABORATORY, CAMDEN, DELAWARE.

Artificial TEETH.

TO THOSE dentists who have for many years used and approved the teeth bearing the stamp of H. D. Justi, it might seem unnecessary to further advertise them, but for the information of the great number of young men who are annually entering the ranks of the Dental Profession, we wish to call attention to a few points in which we claim superiority for these teeth over all others:

IN FORM these will excel both in variety and in close imitation of nature, not only in her ordinary average styles, but also in what might be called her eccentricities of form and arrangement.

IN COLOR we have succeeded in most nearly securing that bony texture which is so distinct from the porcelain-glitter we see in so many artificial teeth, and in the delicate blending of the shade they are eminently satisfactory.

IN STRENGTH they have the highest degree possible consistent with maintaining the other qualities required. It would be quite possible to make teeth much stronger by disregarding beauty of form, and making a coarse, thick block, but this ought to be, and doubtless would be, at once rejected by both dentist and patient.

IN ADAPTATION to the alveolar ridge, great care has been taken to meet every requirement, and finally we ask for the product of our factory only a careful criticism and fair trial to convince the profession that we are fully justified in the superiority we claim for it.

H. D. Justi & Son,

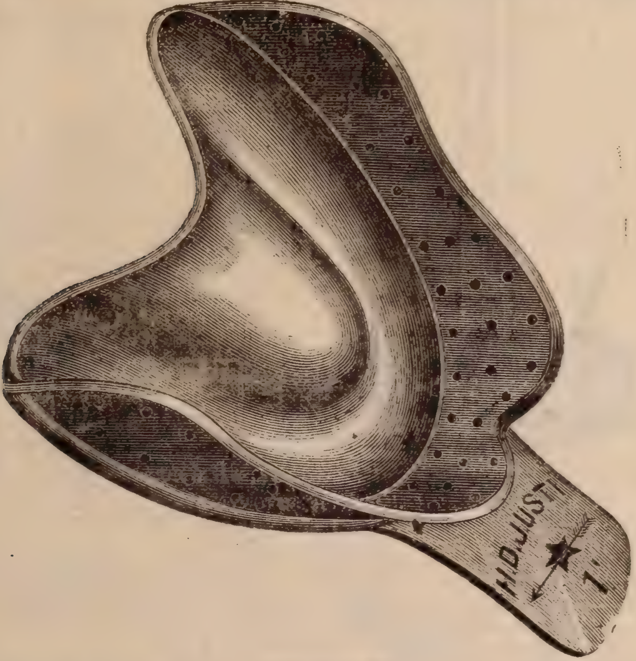
PHILADELPHIA,
1301 and 1303 Arch Street.

CHICAGO,
66 Madison Street.

THE WEIRICH

New Flexible

RIM IMPRESSION TRAYS.



[PATENTED.]

WHILE plaster impressions are acknowledged to be the only reliable ones, every dentist has found a serious difficulty in obtaining them, owing to the tendency of the plaster on the outside the maxillary ridge to break away when the impression is withdrawn from the mouth. This usually breaks into small pieces, always difficult and often impossible to replace. From this cause sometimes several impressions have to be taken before one sufficiently perfect for use can be obtained.

In the New Tray this trouble is removed. The plaster is mixed and applied in the usual way; when withdrawn it will break away, but the pieces, adhering to the rubber, will come directly back into their proper places, and the impression can at once be brought into perfect shape. This result is obtained by making the rim of the Tray of rubber, as shown in the cut. This rubber is fastened in a groove in the base of the Tray, and is sufficiently rigid to support the plaster while taking the impression, and yet flexible enough to permit the impression to be withdrawn without difficulty.

These upper Trays are five sizes. No. 1, the largest, being the same as the common No. 1 Tray; the others are evenly graded to No. 5, which is small enough for any case likely to be presented.

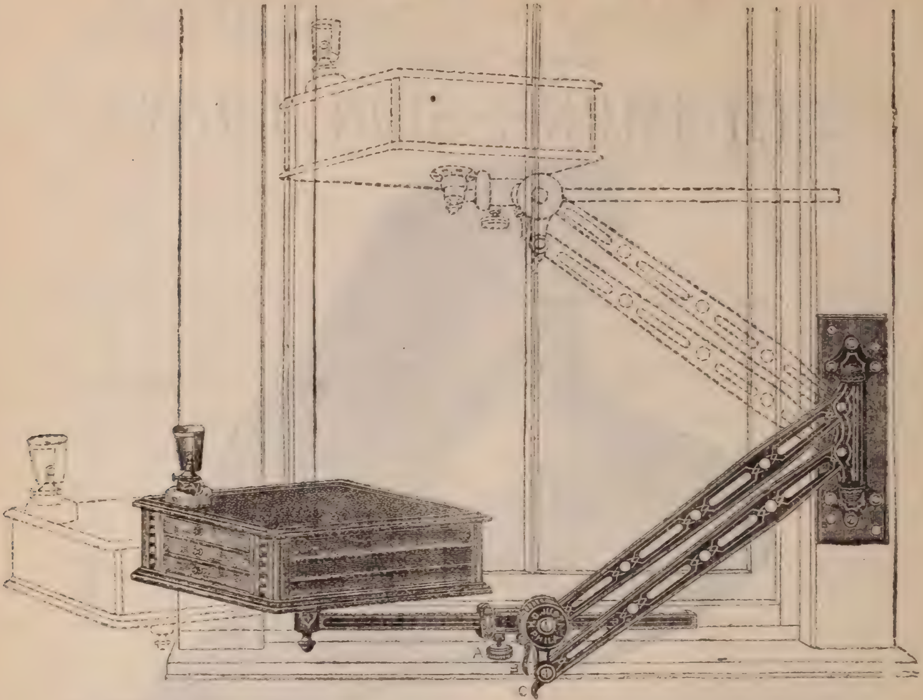
This invention has been tried by a number of dentists, and pronounced a great success, saving them much annoyance and trouble, and giving them far more perfect results.

PRICE...each, $0.75

H. D. JUSTI & SON,

PHILADELPHIA: **CHICAGO:**
and 1303 Arch St. **66 Madison St**

The HANDY BRACKET.



The success which this Bracket has achieved and the universal popularity and demand for it, has far exceeded our highest expectations; having made a number of improvements since its original introduction, we considered it essential to give a new illustration of it as it is now made, accompanied by the Grigg Table.

The Bracket being so well known and fully described before we deem it unnecessary to repeat, but wish only to add, that when we stated this Bracket to be one of the most convenient ever placed on the market, we were not wrong in our assertion, as its great sale has since demonstrated.

PRICES

Handy Bracket with Table No. 1,	$12,00
" " " " No. 2, Lamp and Shield,	14.00
" " " Grigg Table, " " "	24.00
" " " Allen " Plain Sides, Lamp and Shield,	18.00
" " " " " Glass " " " "	21.00
Small Table No. 1, covered with Cloth or Leather,	3.00
" " No. 2, " " " " Lamp and Shield,	5.00
Allen " Plain Sides " " " " " " "	9.00
" " Glass " " " " " " " "	12.0
Grigg " covered with Cloth or Leather, Lamp and Shield,	15.0

H. D. JUSTI & SON,

PHILADELPHIA, - - CHICAGO,

1301 and 1303 Arch St, 66 Madison St.

DIRECTIONS FOR USE OF

BLAIR'S VAPORIZER

FOR THE TREATMENT OF PULPLESS TEETH.

1. If possible, always adjust rubber dam, or usual method of keeping tooth dry. Never use a broach or drill in canal until treated with vaporizer.

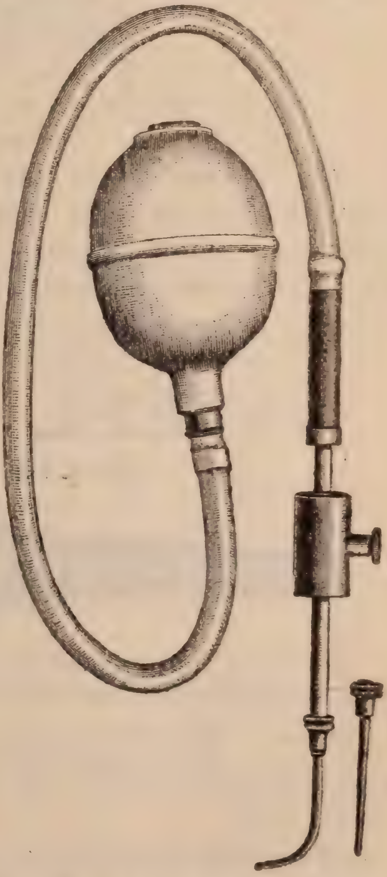
2. Clean out pulp chamber and expose openings of nerve canals; then introduce one of the points in opening of canal, and force the gas generated in the vaporizer into the canal until the root is saturated with the gas. Clean out canals thoroughly when possible, then treat again and fill immediately, if there is no indication of pus coming through the end of roots.

3. If there is a blind abscess in the tooth, stop up lightly with cotton and have patient return on third day. Three treatments will generally cure any case of blind abscess.

4. If there is a fistulous opening, try and force gas through same. One application is often all the case will require.

Open screw top on vaporizer and place small quantity of the iodoform (which accompanies each instrument) in chamber; then heat sufficiently, not too hot, to cause a thin stream of vapor to issue, on pressure of bulb, from point of vaporizer needle. Then insert in canal and force gas into same.

This gas will penetrate to every point in the canal and will absolutely destroy every vestige of animal life.



PRICE, EACH, $3.50.

MORRISON BROS., Sole Agents,

NASHVILLE TENN.

Hawe's Moulding Flasks.

Fig. 1.

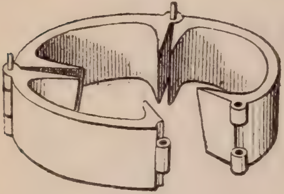


Fig. 2.

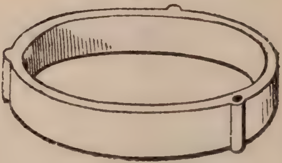


Fig. 3.

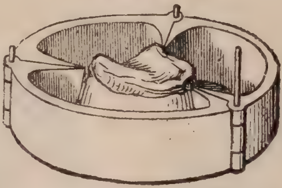
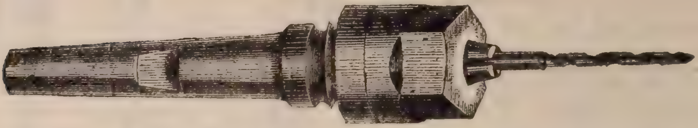


Fig. 1 represents the lower section of the Flask, slightly opened, to show the Joints. Fig. 2 is the upper section. When ready for use, the lower section is closed and confined by a Pin, and the Plaster Model placed in it, as represented in Fig, 3.

Price - - - - - $3.00

STEEL CHUCK.

PATENTED.



The above cut represents a very complete SELF-CENTRING, THREE-JAWED STEEL CHUCK, carefully made, durable and convenient. The wearing parts are hardened; the jaws have a good bearing on the drill, and hold securely either a straight or tapered shank.

It carries Drills, Burs, or Corundum Points of the DENTAL ENGINE, one-eighth of an inch in diameter, and under, and made to fit our AMATEUR, UNITED STATES SHORT SPINDLE AMERICAN SHORT SPINDLE, and HAND and FOOT LATHES.

Price, with Wrench, - - - $2.00.

REDUCED PRICES

— OF —

Dental Machinery of Our Own Design.

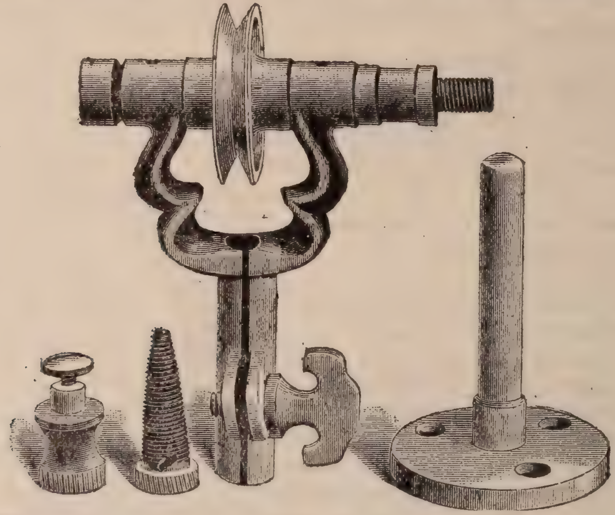
Amateur Lathe—Complete,	$25 00
" " Head, &c. all above stand,	13 00
" " Stand and Cord,	13 00
United States Lathe—Long Spindle,	15 00
" " " Short Spindle,	15 00
" " " Stand and Cord,	11 00
American Lathe,	14 00
" " Extra Large Driving-Wheel,	15 00
Diamond Lathe—Complete,	13 00
" " Fly Wheel,	7 00
Fly-Wheel No. 1,	7 00
Portable Hand or Foot Lathe—Complete,	5 50
" " " " Without Foot Attachment,	5 00
Quadrant Hand Fly-Wheel Lathe,	4 50
Hand Fly-Wheel Lathe,	4 50
Hand Lathe,	4 00
Diamomd Lathe Head—Polished Brass,	6 00
Socket Table Head,	4 50
U. S. Table Head—Holes in base to screw to table,	4 00
Engine Lathe Head—Nickel Plated,	4 00
American Lathe Head—Holes in base to screw to table,	4 00
Ladles and Handle—Two Ladles and one Handle,	75
Extension Brackets—Weight only five pounds,	6 00
Patent Portable Head-Rest—Nickel Plated,	10 00
Portable Head-Rest—Weight only four pounds, Bright Parts Nickel Plated,	4 50
Soldering Lamps,	90
Flask Presses—Well made and very strong—No. 1 Old Style,	1 50
" " " " " " " No. 2 New Style,	1 50
Ingot Moulds—Broad base with handles, No. 1,	2 25
" " " " " " No. 2,	2 75
" " " " " " No. 3,	3 25
Bailey's Moulding Flasks—Per set of 2,	75
Steel Chuck,—to fit our Amateur United States, American, Short Spindle and Hand and Foot Lathe,	2 00
Welch's Nerve Paste,	1 00
Britannia Impression Cups—long handles, various styles and 29 sizes—each,	25

☞ **We make no charge for Boxing any of the above goods.**

SNOWDEN & COWMAN MFG. CO.

9 West Fayette Street, Baltimore, Md.

ENGINE LATHE HEAD FOR BRIDGE AND CROWN WORKERS.



THIS LATHE HEAD CAN BE ATTACHED TO SHAW ENGINE BY SLIPPING SOCKET OVER STANDARD AND TIGHTENING THUMB SCREW. IT IS VERY LIGHT AND NEATLY NICKEL PLATED. IT RUNS VERY SMOOTHLY AND LIGHTLY. IT ALSO CAN BE MOUNTED ON TABLE AS SHOWN IN CUT BY THE SMALL ATTACHMENT. . . . .

PRICE COMPLETE - - $4.00.

VULCANIZERS

Our Own Manufacture.

WE ARE MAKING 3 STYLES.

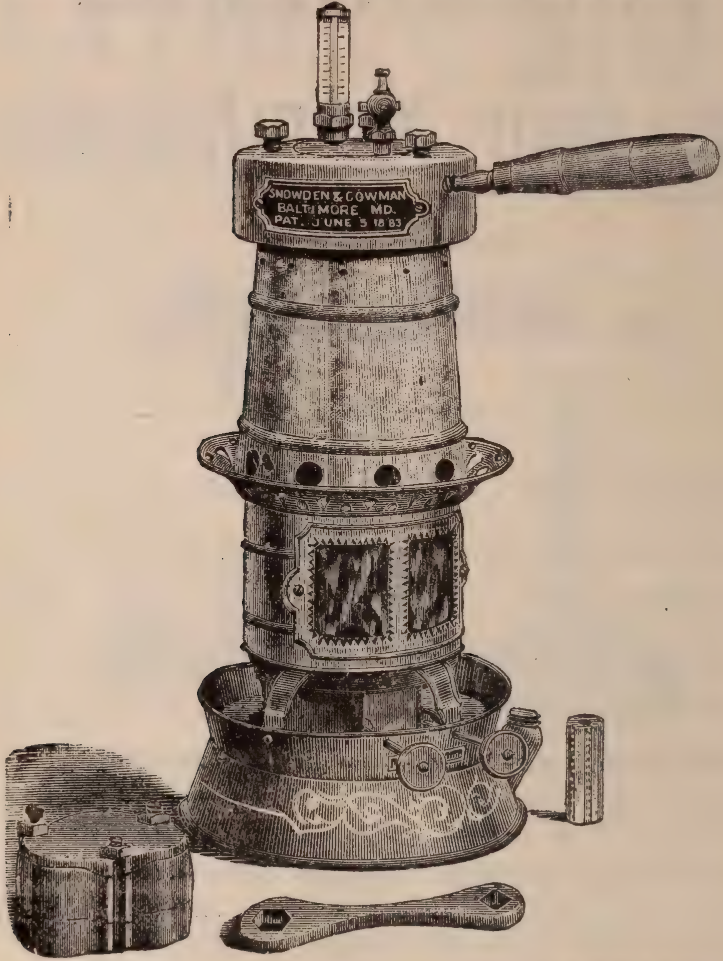
Complete with Coolidge's Gas and Time Regulator,	$25 00
Complete with Gage and Blow-off Cock for Gas or Kerosene,	21 00
Complete with Thermometer and Blow-off Cock for Kerosene or Gas,	18 00
Vulcanizers complete with Two Brass Flasks, instead of Iron Flasks, adds	1 50
Vulcanizers complete without Two Iron Flasks, deduct	1 50
Vulcanizers complete, less Kerosene Stove, deduct	1 70
Vulcanizers complete, less Gas Stove, deduct	1 00
Large Iron Flasks, each	1 00
Large Brass Flasks, each	1 50

SNOWDEN & COWMAN MFG. CO.

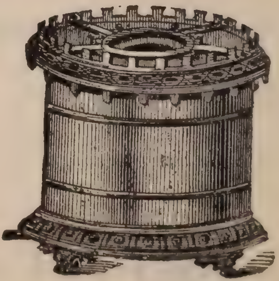
9 W. Fayette Street, BALTIMORE, MD.

SNOWDEN & COWMAN MFG. CO.'S

New Patent Vulcanizer.



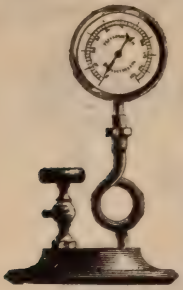
Complete for Kerosene or Gas, with Two Large Malleable Iron Flasks, ***$18.00***

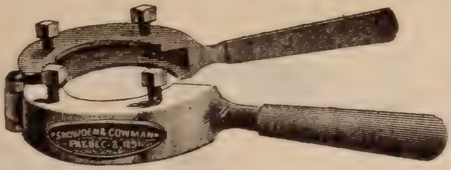


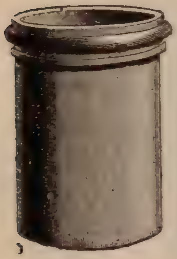
Gas Stove.

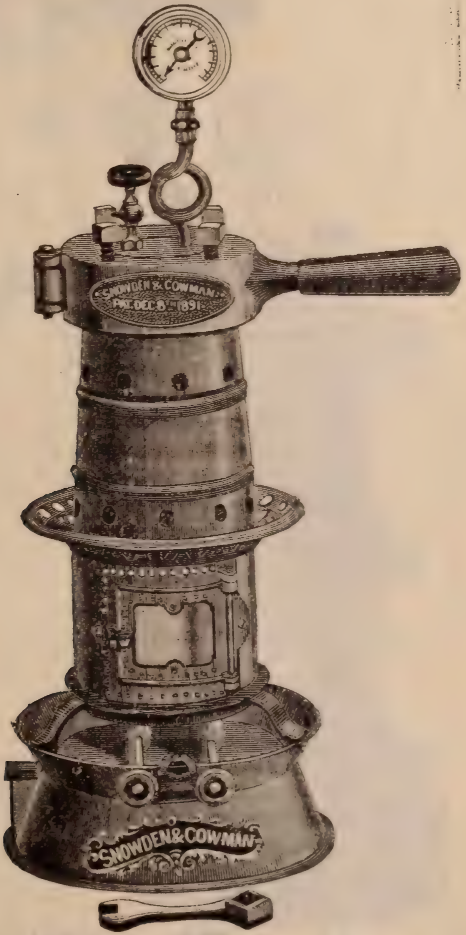
PATENTED DEC. 8, 1891.

Snowden & Cowman Mfg. Co.'s Hinged Clamp Vulcanizer.





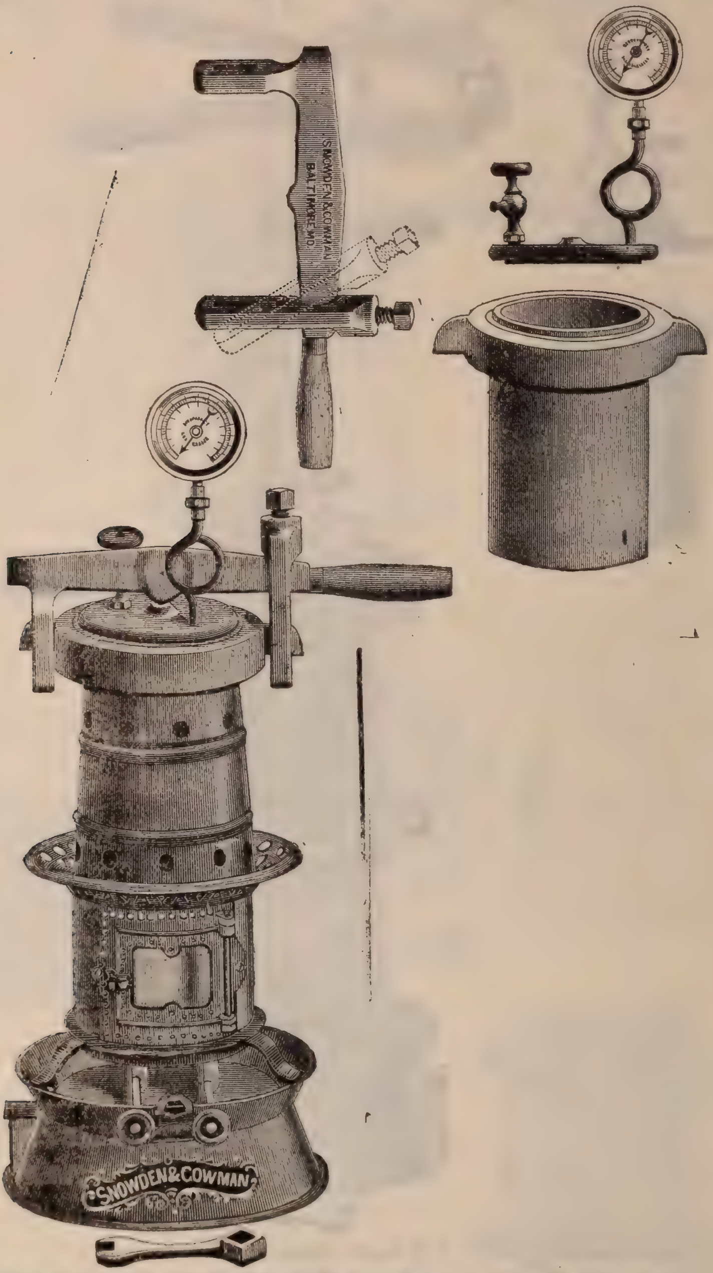




Price complete with 2 Flasks Improved for Gas or Kerosene with Guage as represented,	*$21,00*
With Thermometer and without Guage,	*18.00*

CIRCULARS ON APPLICATION.

Snowden & Cowman Mfg. Co.'s Improved Cross-Bar Vulcanizer.



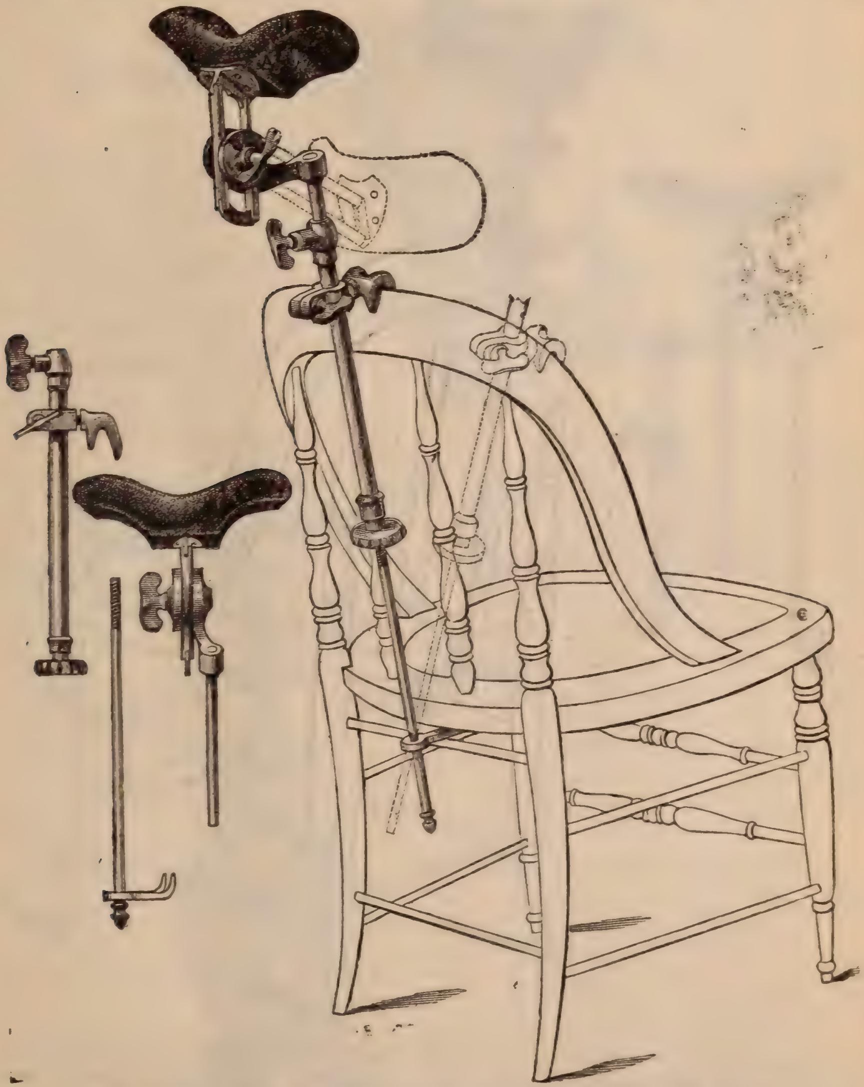
Price complete with two Flasks for Gas or Kerosene, with Guage as represented, ...	$21.00
With Thermometer and without Guage,........................	18.00.

CIRCULARS ON APPLICATION.

Snowden & Cowman Mfg. Co.'s

—NEW—

Portable Head-Rest.



PRICE, Full Nickel Plated, - - - *$10.00*

—MANUFACTURED AND FOR SALE BY—

SNOWDEN & COWMAN MFG. CO.

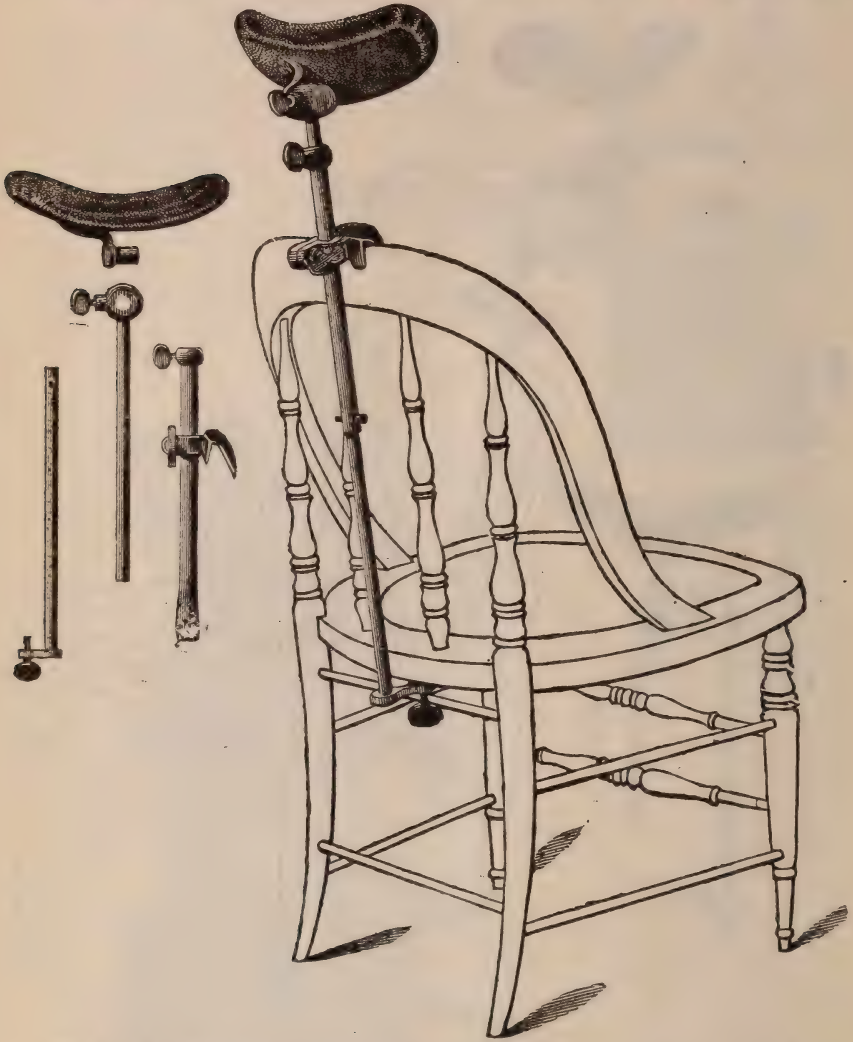
2 9 West Fayette Street Baltimore Md.

Price Reduced

SNOWDEN & COWMAN MFG. CO.'S

IMPROVED-

Portable Head-Rest.



This Head-Rest can be attached to any chair, is very firm, and can be raised, lowered or moved backward or forward without interfering with attachment to the chair. Handsomely painted and bright parts nickel-plated.

It weighs only 4 lbs., and occupies a space only of 13 x 4 inches. PRICE, $4.50.

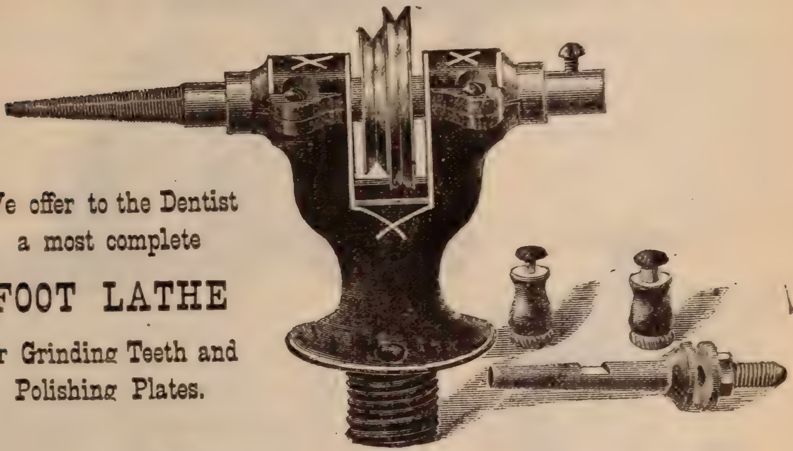
Price Reduced.

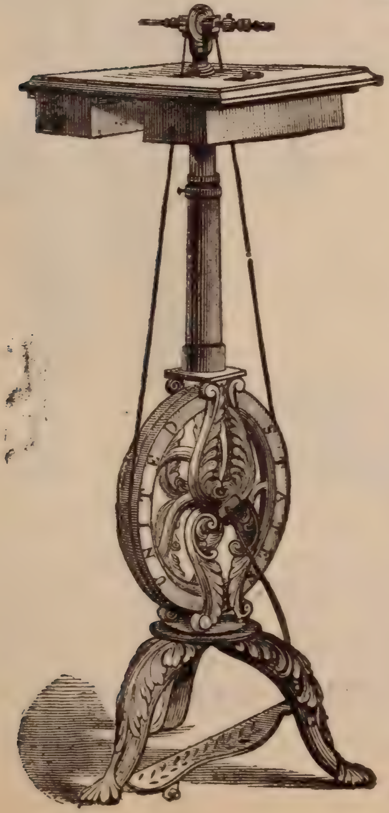
UNITED STATES LATHE.

We offer to the Dentist
a most complete

FOOT LATHE

for Grinding Teeth and
Polishing Plates.





It has been gotten up in a superior manner, great care having taken to make it durable and efficient. It has a movable column and table, which is capable of being elevated eight inches, to accommodate the operator in either a sitting or standing posture.

It can be packed in a box sixteen inches square, and can be set up in a few minutes, presenting a very neat and pleasing appearance, suitable for the office or laboratory. It is finished in bronze, and runs very light and steady.

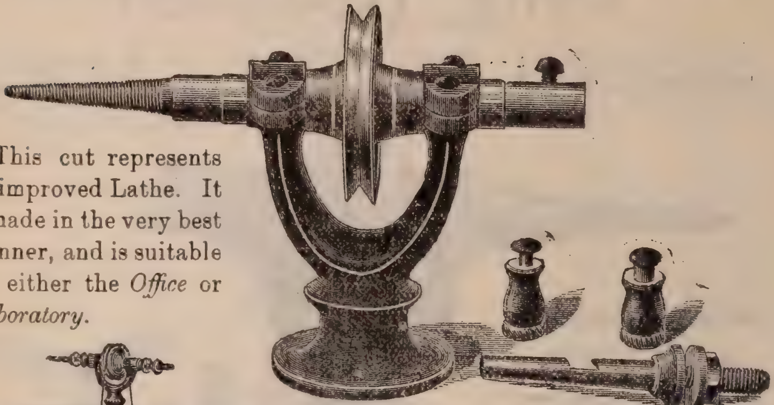
Price of Lathe complete with Short Spindle, as per cut,	$15.00
Price of Lathe complete with Long Spindle,	15.00
Price of Stand only, including Cord and and Coupling,	11.00

Snowden & Cowman Mfg. Co.,

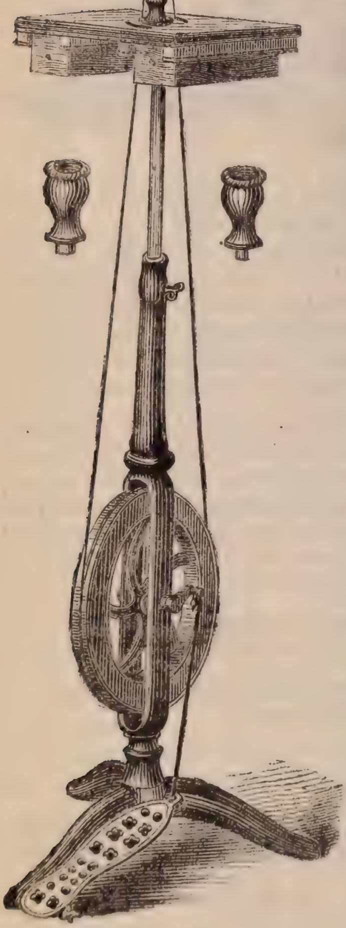
9 W. Fayette Street,

BALTIMORE, MD

AMERICAN LATHE, PRICE REDUCED.



This cut represents an improved Lathe. It is made in the very best manner, and is suitable for either the *Office* or *Laboratory*.



It has a solid spindle, one end of which is a taper screw for brush or felt wheels, and also, a space for a large corundum wheel. The other side of the spindle has a space for a large corundum wheel and a screw to receive the chucks, on which very small corundum wheels can be placed.

It has a movable column and table, which is capable of being elevated ELEVEN inches, to accommodate the operator in either a sitting or standing posture.

Either end of the spindle can be thrown towards the operator, if more convenient, by the set screw at the top of the column.

We also make for this Lathe a Socket Spindle—similar to our U. S. Lathe Short Spindle.

Price of Lathe, as per cut, with two Chucks, - - - -	$14.00
Price of Lathe, with Socket Spindle, with two Chucks, - -	14.00
Price of Lathe, with Extra Large Driving Wheel, - - -	15.00
Chucks, extra. - - - - -	.15

☞ No charge for Boxing.

SNOWDEN & COWMAN MFG. CO.,

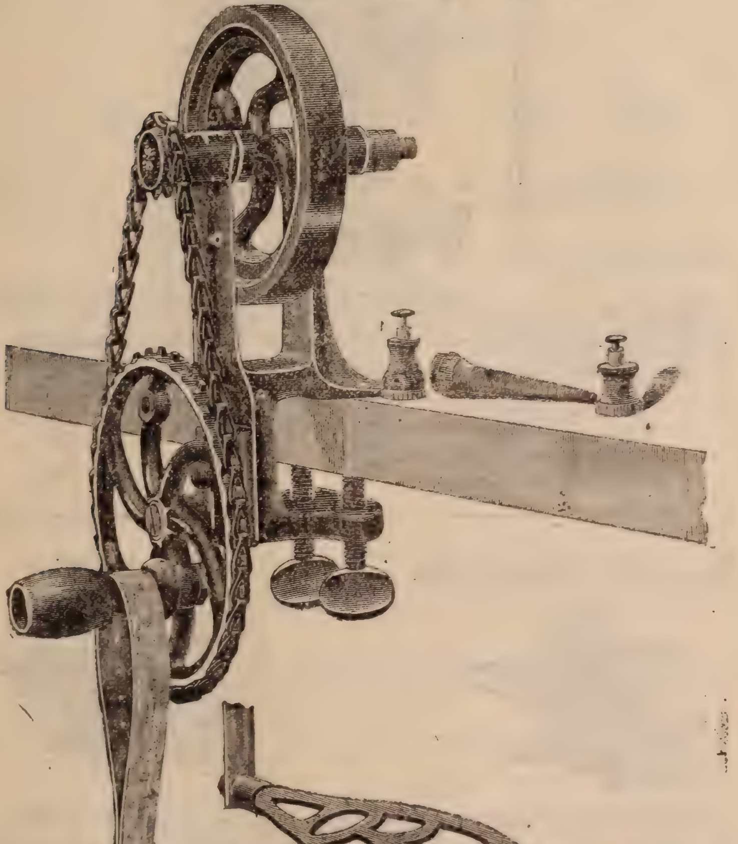
9 W. Fayette Street, Baltimore.

SOMETHING NEW FOR TRAVELLING DENTISTS.

LINK CHAIN LATHE,

TO BE USED EITHER BY HAND OR FOOT POWER.

PRICE, - $7.00.



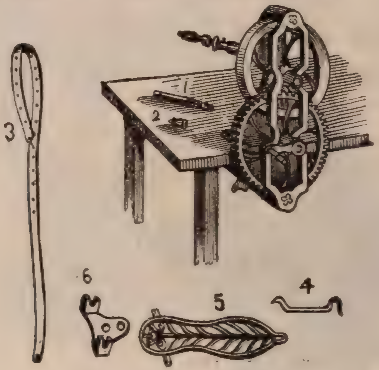
The Fly Wheel with Spindle is driven with an Endless Chain and makes very little noise, as it is propelled by large and small Sprocket Wheels, this gives it a very steady movement and does not require as much power as a geared lathe. It is fastened to table or bench by two Thumb Screws which make it impossible to turn when both are screwed up. It is very light and can be carried in a small satchell.

Snowden & Cowman Mfg. Co.,

9 W. Fayette Street, BALTIMORE, MD.

PRICE REDUCED.

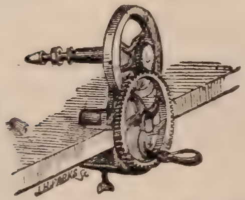
Portable Hand or Foot Lathe.



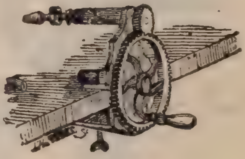
The above is a cut of a PORTABLE HAND OR FOOT LATHE, which is very efficient, manufactured for the traveling dentist; weighs under 7 pounds, and occupies the space of 6 by 9 inches. Members of the profession who have seen it pronounce it first rate.

Price, complete, - - - - - -	$5 50
Without Foot Attachment, - - -	5 00

Hand Fly Wheel Lathe.



Hand Lathe.



HAND FLY WHEEL LATHE.—It is intermediate between the Hand Lathe, and the Hand and Foot Lathe; it weighs only three pounds and is a first rate Lathe. - - PRICE, $4 50

HAND LATHE.—It is small, strong and durable, and weighs only two and a quarter pounds; we have sold a large number of these Lathes,—giving great satisfaction. - • PRICE $4 00

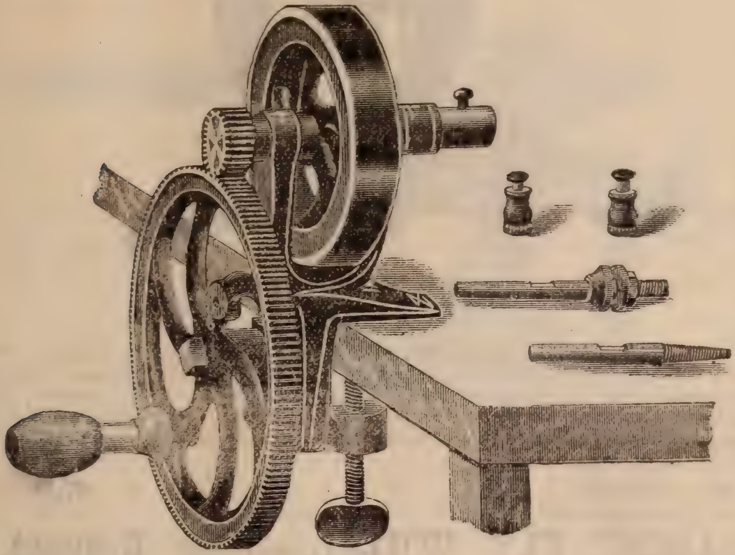
☞ All of the cog wheels of our Lathes are turned and cut on a machine, and are uniform, which makes them run true and with little noise.

SNOWDEN & COWMAN MF'G CO.,

No. 9 West Fayette St., Baltimore.

NEW HAND FLY WHEEL LATHE.

This Lathe is made larger and heavier and can be used with foot. It runs very steady and makes a good lathe for either Office Laboratory or to carry around. It is very neat.



PRICE, - - - -	$5 00
" with Foot Attachment and Strap,	5 50.

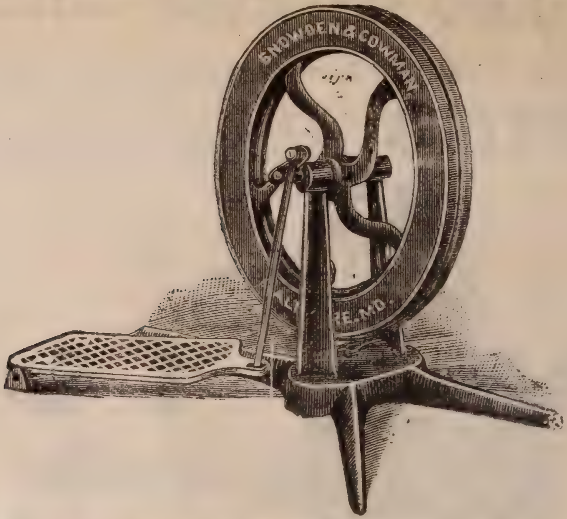
"The proof of the pudding is in the eating."

If the experience of dentists generally did not prove OUR GOLD AND PLATINA ALLOY a superior filling they would not be willing to pay nearly double more for it than the price of common amalgams. I suppose there is not another alloy or amalgam so generally used by our better class of dentists.

Welch's Alloy, 1 oz. $3.00; 2 oz. $5.50, 4 oz. $10.00; 10 oz. $22.00.
Welch's Amalgam, 1 oz. $2.00; 2 oz. $3.50; 4 oz. $7.00; 10 oz. $15.00.
Welch's Oxiphosphate, large $1.50; medium $1.00.
Liquids or powders, large 75 cts.; medium 50 cts.

T. B. WELCH, - - - - Vineland, N. J.

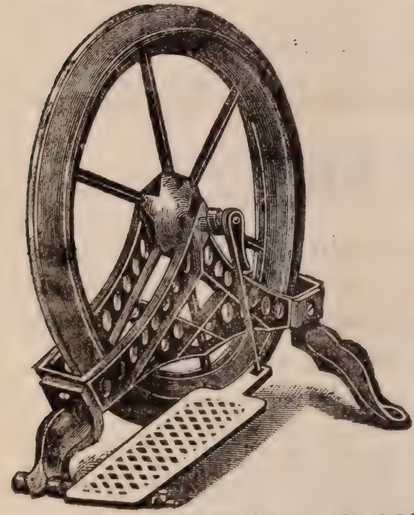
FLY WHEEL, No. 1, NEW.—Price Reduced.



This Fly Wheel weighs 30 lbs., with diameter of wheel 15 inches. The stand is the stiffest and steadiest of any driving wheel in the market. Owing to the position of the feet and the peculiar arrangement of the treadle, the wheel has an immense power and is very light running. In boxing remove pin that connects treadle with rod and fold treadle by side of the wheel. Weight complete, 46 lbs.

Price Boxed, - - - - - - **$7.00**

DIAMOND FLY WHEEL.—Price Reduced.



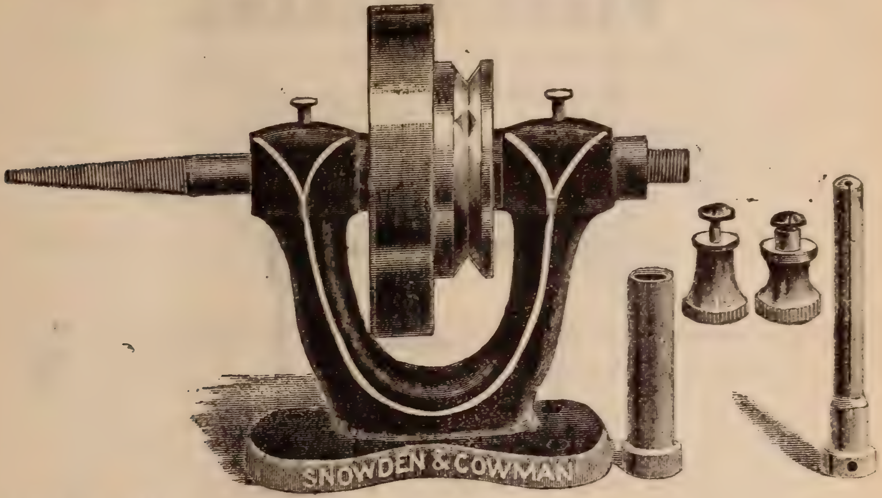
This fly-wheel is eighteen inches in diameter, with wrought iron spokes, in an iron frame, complete in itself, can be set any where, and runs very steady.

It has sufficient power and speed for any Dentist's Lathe Head. The feet are easily detatched, and all can be packed in a smaller box than any other Fly Wheel of its dimensions in the market.

Price Boxed, - - **$7.00.**

SNOWDEN & COWMAN MFG. CO.,
No. 9 W. FAYETTE STREET,
Baltimore.

OUR NEW LATHE HEAD.

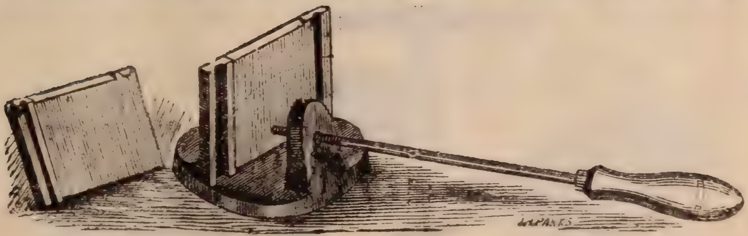


VERY SIMPLE AND EASY RUNNING.
ADJUSTMENT QUICKLY MADE.
VERY DURABLE AND STEADY.

PRICE WITH 4 CHUCKS, - - - $5.00.

SNOWDEN & COWMAN MFG. CO.'S

INGOT MOULDS.

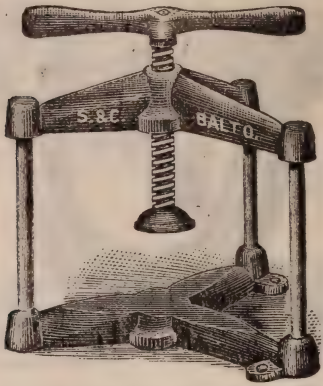


No. 1, will cast a plate from one half of an inch to two inches in width, also a round, half-round and square bar. -	$2.25
No. 2, will cast a plate from one half of an inch to two and three quarter inches in width, also a round, half-round and square bar. - - - - - -	$2.75
No. 3, will cast a plate 3 inches wide and 4 inches long also round, half-round and square bar, -	$3.25

LIBERAL DISCOUNT TO THE TRADE.

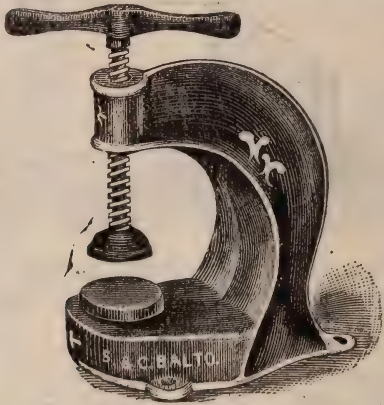
Flask Presses.

No. 1, Old Style Improved.



This Press is intended to close the flask after packing with rubber. It is of great advantage, saving screws and flasks. The upright rods are of wrought iron and the handle of the screw can be detached. They are *well made* and *very strong*, and has been made larger, so that it will take any Flask in the market. Price, - - - - $1.50.

No. 2, New Stvle.

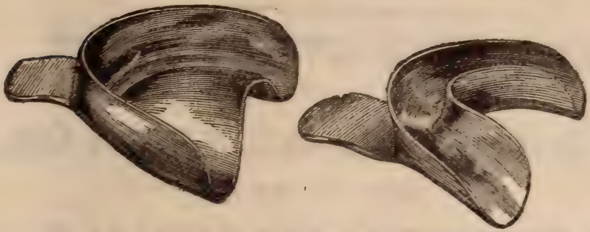


This Press is made of cast iron, very heavy, with steel screw and detachable handle. It has a Pivot Plate to level up the flask, insuring always a central pressure on the flask ; will take any flask in the market. Price - - $1.50

BRITANNIA IMPRESSION CUPS

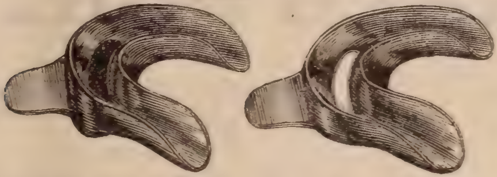
LONG HANDLES.

We Manufacture the following Sizes and Varieties:



UPPER, Nos. 00, 0, 1, 2, 3, 4, 5, 6, 7.—(No. 00 is the largest size.)
LOWER, " 1, 2, 3, 4, 5. —(No 1 is the largest size.)

PARTIAL LOWER CUPS.



ENCLOSED CAVITY, Nos. 9, 10, 11.—(No. 9 is the largest size.)
OPEN CAVITY, Nos. 6, 7, 8. —(No. 6 is the largest size.)

UPPER AND LOWER CUPS.

PARTIAL UPPER—Flat Bottom, Nos. 8, 9, 10, 11—(No. 8 is the largest.)
FULL LOWER— " " " 12, 13, 14—(No. 12 is the largest.
PRICE..............................**Each**....................**25cts**

SNOWDEN & COWMAN MFG. CO.
9 West Fayette Street, Baltimore Md

Dental Depot,

ESTABLISHED 1856.

SNOWDEN & COWMAN MFG. CO.

MANUFACTURERS OF

Lathes, Head Rests, Vulcanizers, Impression Cups, &c.

AND DEALERS IN

DENTISTS' MATERIALS,

No. 9 W. Fayette St., between Charles & Liberty Sts

BALTIMORE.

GOLD FOIL.

	Per 2 oz.	oz.	½ oz.	¼ oz.	⅛ oz.
Abbey & Sons,		$32.00	$16.00	$8.00	$4.
Valleau's		30.00	15.00	7.50	4.
Ney & Co's.		29.00	15.00	7.50	4.
S. S. White's, ¼ Century,	$58.00	30.00	15.00	8.00	4.
" " Globe,	58.00	30.00	15.00	8.00	4.
" " 1000 Fine,	58.00	30.00	15.00	8.00	4.
R. S. Williams, Cylinders, A, " " " B, " " Rect. Pellets, " " Standard,		30.00	15.00	8.00	4.00
Watt's Crystal,		32.00	16.00	8.00	4.00
E. Rowan & Co.		29.00	15.00	3.20 per 1-10 oz.	
" untrimmed,				5.60 per 1-5 oz.	
"				2.90 per 1-10 oz.	

TIN FOIL.

Ney & Co's—Nos. 4, 6, 8, and 10, - -	40 Cents per Book
S. S. White's, - - - - - - -	30 " " "
Nos. 4, 6, 8 & 10, (extra tough)	40 " " "

SNOWDEN & COWMAN MFG. CO.,

No. 9 West Fayette Street Baltimore

PORCELAIN TEETH.

GREATLY REDUCED.

We keep on hand a large assortment of Teeth of the following Manufacturers, which we

SELL AT THEIR REDUCED PRICES.

The S. S. White Dental Manf. Co.'s

	Each.	$10 lots.	$25 lots.	$50 lots.	$100 lots.	$300 lots.
Plain Rubber & Plate Teeth	.12	.11½	.11	.10	.09	.08
Gum Sectional Rubber, Plain Plate, long Pins, Single Gum Rubber and Gum Plate Teeth,	.12½	.12	.11½	.11	.10	.09

H. D. JUSTI & SON'S.

	Each.	$10 lots.	$25 lots.	$50 lots.	$100 lots.
Plain Rubber and Plate,	.10	.09½	.09	.08½	.08
Gum Sectional Rubber, Plain Plate, Single Gum Rubber and Gum Plate,	.10½	.10	.09½	.09	.08½

Sibley's or Wilmington Co.'s Gum or Plain Teeth.

Per Set 14 Gum or Plain, ...	$ 1 00
11 Sets, " " "	10 00
29 " " " "	25 00
60 " " " "	50 00
125 " " " "	100 00

Less than Set of Fourteen Eight Cents per Tooth.

SNOWDEN & COWMAN MFG. CO.

DENTAL DEPOT

No. 9 W. Fayette Street.

AMALGAMS.

Townsend's	$1.75	per ounce
Chicago Refining Co's	4.00	" "
Caulk's Par-Excellent Alloy,	3.00	" "
Caulk's White Alloy,	4.00	" "
Lawrence's	3.00	" "
Arrington's	2.00	" "
King's,	3.00	" "
Globe Alloy,	2.50	" "
Alba "	2.50	" "

CEMENTS.

Agate Cement, in 1 oz. Boxes,	$1.50
" " " ½ "	75
Weston's Insoluble Cement, one or two colors,	1.00
Dr. Flagg's Plastic Enamel, per Pk'g,	2.00
Fossiline, " "	2.00
Metcalf's Cement, " "	2.00
H. D. Justis's Insoluble Cement,	
1 oz. Package, 1, 2, 3, 4 Colors,	3.00
½ " " any above "	1.50
H. D. Justis's Acme Cement,	
Per Box,	1.00
Dr. T. B. Welch, & Son, Art. Dentine, per Pk'ge	1.50
" C. N. Pierce Phos. Zinc, " "	2.00
" T. O. Oliver's Oxy Phos, " "	2.00
" Smith's " Chloride, " "	1.00
Houghtons's Os-Artificial, " "	75
Poulson's Mineral Plombe, " "	2.50
Dawsons's Mineral Cement " "	1.50
Caulks's Diamond "	
Per Package, 2 Colors,	1.50
" " 1 "	1.00
J. Ogden Britten's Cement, 2 colors,	1.50

DENTAL RUBBER.

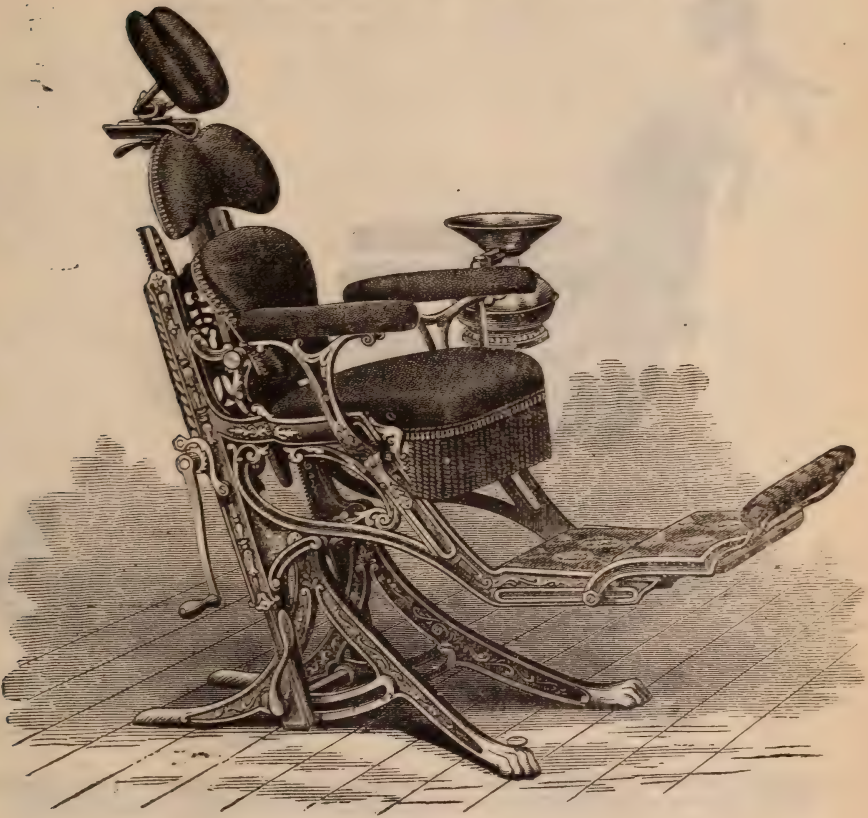
Ram's Horn Rubber,	per lb.	$2.25
" " " Pink	"	5.00
Sam'l S. Whites' No. 1 Improved,	"	2.25
Doherty No. 1,	"	2.25
" " 2,	"	2.25
Sam'l S. White's Bow Spring,	"	2.75
Black Rubber	"	2.50

GUTTA-PERCHA.

Ram's Horn,	per lb.,	$2 25
Sam'l S. White's	"	2.25

THE MORRISON DENTAL CHAIR.

Reissue May 15, 1877. English Patent Dec. 7, 1867.



PRICES.

In best quality Green or Garnet Plush or Plain Morocco	$100.00
In Real Morocco, Embossed	110.00
In finest quality Green or Garnet Plush, puffed and trimmed with Silk Plush, full Turkish Upholstery	120.00

The Illustration shows No. 4 Spittoon, No. 3 Bracket, No. 3 Socket, which are extra and add $8.00 to above price.

BOXING FREE.

STUDENT'S MORRISON CHAIR.

To meet an often-expressed want of a first-class chair at a low price, the Student's Morrison was brought out. It is, in all respects, equal to the regular Morrison chair, except that it is upholstered in a seal-brown corded material, instead of a plush. It presents a very neat appearance, and will wear nearly as well as plush.

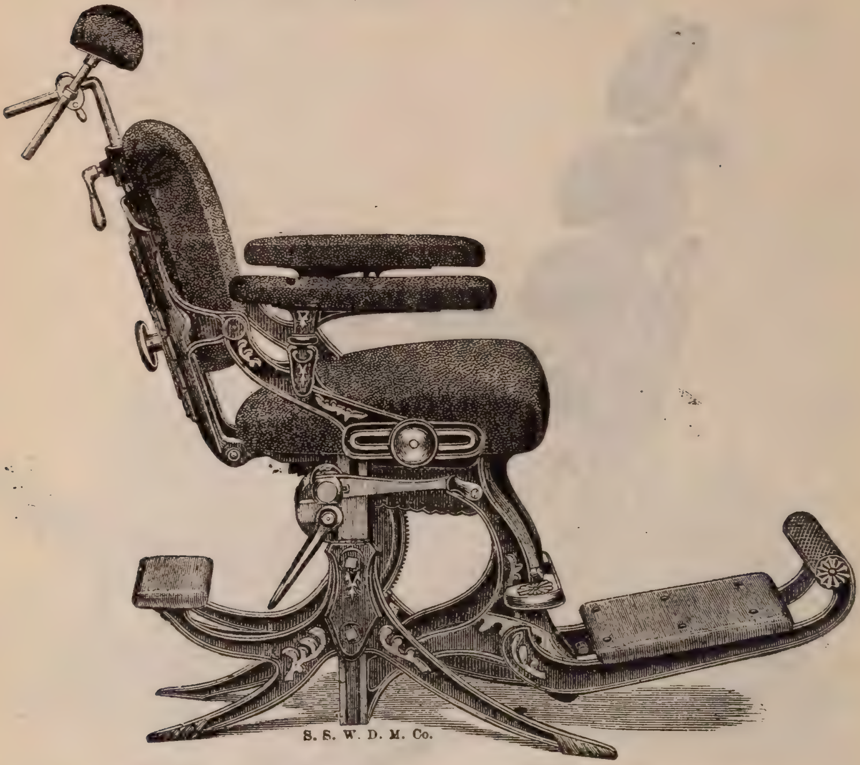
PRICE.

In Corded Upholstery.	$ 85.00

We supply either style of the Morrison Chair, with or without Casters When ordered with Casters, the price is $10.00 extra.

For Sale by Snowden & Cowman Mfg. Co., 9 W. Fayette St., Baltimore.

THE CYCLOID CHAIR



Patented December 28, 1875; July 3, 1877; November 20, 1877; March 9, 1880; May 22 1883. Re-issues July 4, 1876; March 19, 1878; August 27, 1878. Others pending.

This Chair was designed especially to meet a demand for a chair which, while affording a variety of essential movements, could be sold at a lower price than the Wilkerson, The S. S. White Pedal-lever, or the Morrison.

For those who want a low-priced chair which in facility of movements far surpasses anything heretofore offered for the money, the Cycloid is *the* chair. It is strongly built, and the finish and general appearance make it a desirable addition to a well-furnished office.

The lifting mechanism, which has a range of 10 inches, is entirely new and is worked with great ease and rapidity. Should the crank by accident slip from the hand the descend of the Chair is automatically arrested.

The arms are so arranged that they may be rotated out of the way of the operator and yet be of service to the patient.

The foot-board can be adjusted in four positions, and a permanent support for the foot of the operator is placed at the back of the base, the convenience of which will be obvious to those who are in the habit of using a "cricket."

Nearly all of the movements can be made with one hand while standing at the side of the Chair.

Price, upholstered in Corded Material, - -	$ 70.00
" " Best Quality Maroon or Green Plush,	85.00

For Sale by SNOWDEN & COWMAN MFG. CO,

Snowden & Cowman Mfg. Co.'s

DENTIST'S CASE BOOKS,

For Recording all Operations in Dentistry

WITH

TITLE PAGE, INDEX or ALPHABET, and the pages numbered, printed on fine paper with a DIAGRAM of the teeth at the top of each page, neatly and substantially bound in muslin.

PRICES.

One Quire Book,	$1 00
Two "	1 75
Three "	2 50
Four "	3 25

DENTISTS' BILL HEADS.

These Bill Heads are printed on fine paper with diagram of the teeth on each, in the following sizes :

No. 1.—Size, 8½ inches wide by 7 inches,	Price per 100,	$ 50
No. 2.—Size, 4½ inches wide by 7 inches,	"	40
No. 3.—Size, 8½ inches wide by 7 inches,	"	50

JOB PRINTING.

Having fitted up a Printing Office in our establishment, we are prepared to fill at the very shortest possible notice, orders for various kinds of Printing, such as

CIRCULARS, BILL HEADS, NOTE HEADS,
STATEMENTS, HEADINGS, LABELS,
ENVELOPES, CARDS, &C.

☞ Liberal Discount to the Trade.

PUBLISHERS OF

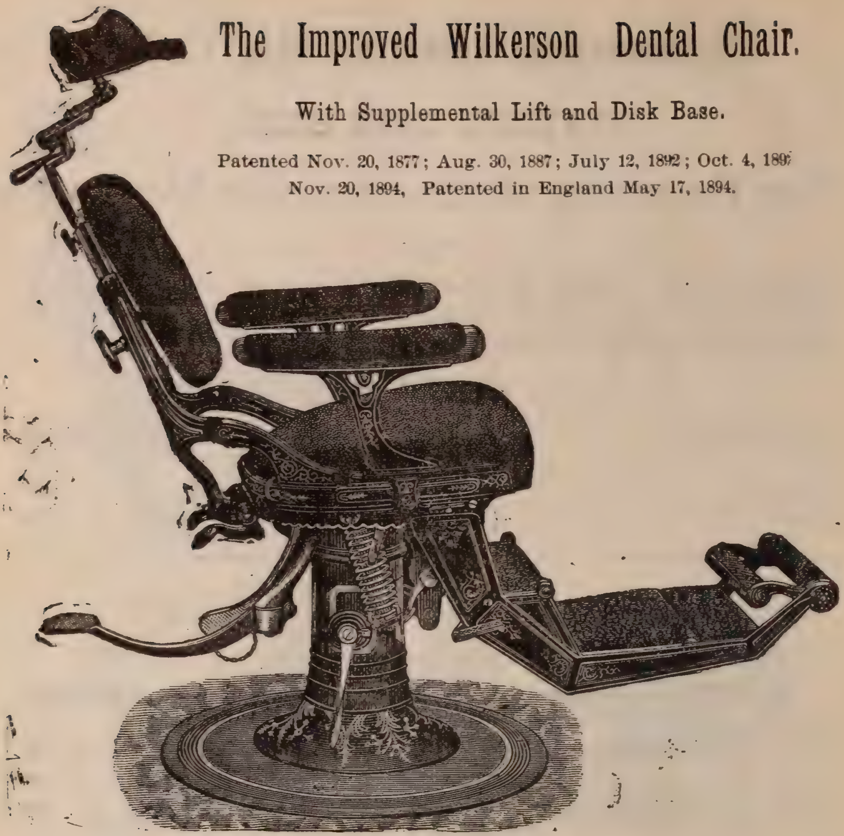
The American Journal of Dental Science,

$2.50 PER YEAR.

The Improved Wilkerson Dental Chair.

With Supplemental Lift and Disk Base.

Patented Nov. 20, 1877; Aug. 30, 1887; July 12, 1892; Oct. 4, 189
Nov. 20, 1894, Patented in England May 17, 1894.



LOWEST POSITION OF THE CHAIR.

Supplemental Lift for the Wilkerson Chair.

One of the most difficult problems in the production of a first-class dental chair has been to obtain the great range of vertical adjustment which is desirable to meet the needs of the dentist without incurring one or more objectionable complications, such as the cutting of the floor of the operating-room or the telescoping of the supports.

The Supplemental Lift, when placed upon the Low or Medium-Base Wilkerson Chair, enables us to meet this problem in a more satisfactory manner than anything hitherto offered.

When placed intermediate between the regular plunger elevating device and the body or frame of the chair, it is possible to lift the chair, before the patient steps in, either five or ten inches, after which the treadle elevating apparatus may be used, as before, thus in fact increasing the vertical range of the chair by the amount of the adjustment mentioned, ten inches.

The operation of the apparatus is simple, the weight of the chair body being almost perfectly balanced by springs, so that it may be raised five inches to the first notch; or through the entire range of ten inches, by lifting by the chair arm.

PRICES. The supplemental lift adds twenty-five dollars to the prices of the Disk Base chair as given on the opposited page.

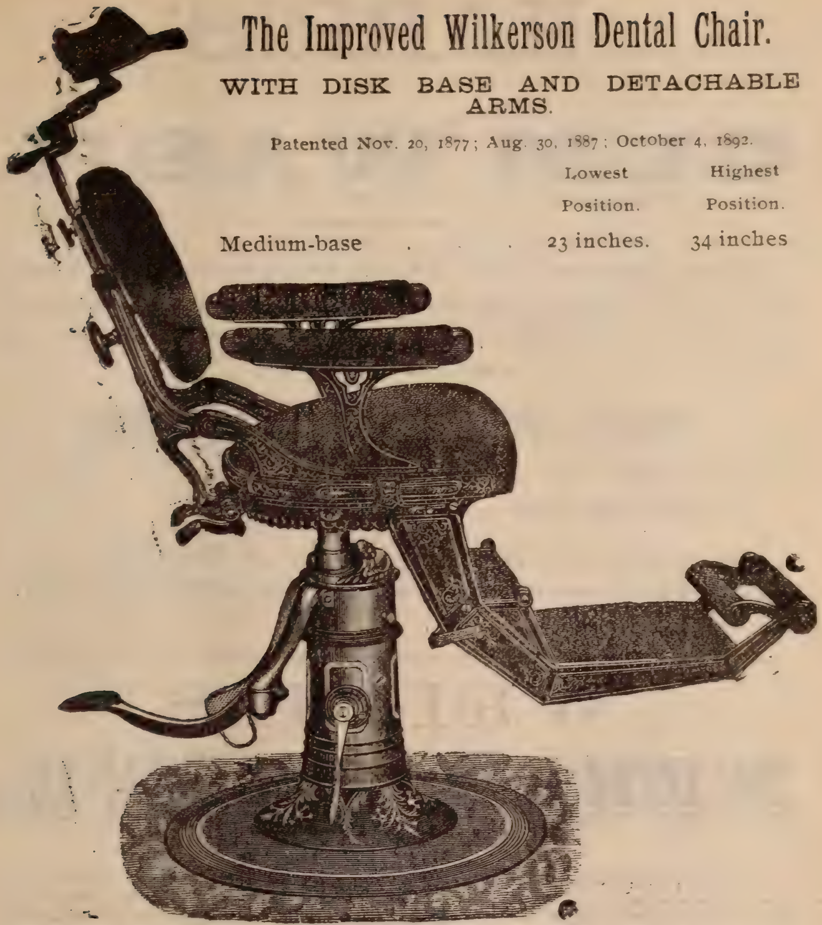
For Sale by Snowden & Cowman Mfg. Co.,
9 West Fayette Street, Baltimore.

The Improved Wilkerson Dental Chair.

WITH DISK BASE AND DETACHABLE ARMS.

Patented Nov. 20, 1877; Aug. 30, 1887; October 4, 1892.

	Lowest Position.	Highest Position.
Medium-base . . .	23 inches.	34 inches



To accommodate those who prefer the Disk Base we have added to our line of dental Chairs the Wilkerson in this style, as shown in the cut, and we are now ready to furnish the *medium range* Chair on the Disk Base.

The high and low range Chairs with Disk Base are now in process of manufacture and will soon be ready for delivery.

Prices of the Wilkerson Chairs, with either Disk or Leg Base, are the same. *In ordering chairs be particular to state if Disk Base is wanted; if not specified, the regular form will be sent.*

PRICES.

	Medium Base.
In Best Quality Green or Maroon Plush	$150.00
" Maroon Plain Turkey Morocco	150.00
" French Finish Maroon-colored Leather	150.00
" Seal	157.00
" Best Quality Green or Maroon Plush, puffed with Plush, trimmed with Silk Cord, with Wilton Capet .	170.00
" Embossed Turkey Morocco, puffed with plain Morocco, edgec with Cord, with Carpet to match . .	180.00

Watkins Sectional Head-Rest adds ten dollars ($10.00) to the above prices.

BOXING FREE.

For Sale by SNOWDEN & COWMAN MFG. CO.,
9 West Fayette Street, Baltimore.

HARRIS'

GUM WASH.

This very pleasant and efficient Lotion has been found highly beneficial when applied to diseased gums after removing the causes of irritation; and in cases where teeth are sensitive from cold or the receding of the gums. Also, applied after extraction it allays pain and irritation.

NEATLY PUT UP IN THREE OUNCE BOTTLES.

3 oz. Bottles, each,	$ .25
3 oz. Bottles, per dozen,	2.75

Made from Formulae prepared by Dr. Chapin A. Harris and has been on the market for the past thirty-two years and endorsed by every dentist who has used it.

WELCH'S

NERVE PASTE.

This preparation is very certain in its action on the nerve, destroying it in less than twenty-four hours. It has the advantage of not causing pain or producing inflammation, with very rare exception. Also, it may be used with safety in cases of toothache that proceed from exposed nerve, and seldom fails to give relief in from five to twenty minutes.

Directions.—Place a portion, of the size of a pin's head, in *immediate contact* with the exposed nerves, covering it carefully with wax, allowing it to remain twenty-four hours. A very minute portion placed in a cavity, in preparation for filling, will destroy its sensibility in four to six hours. The bottle contains sufficient for two hundred applications.

N. B.—If the paste should become dry, moisten it with creosote, or warm it until it is quite soft.

☞If, after twenty-five applications, it does not give satisfaction, return the Nerve Paste and we will return the price.

For Sale by SNOWDEN & COWMAN MFG. CO.,
9 West Fayette Street.

FORCEPS.

We keep in stock a large line of selected forceps made from best quality of steel. Nickle Plated, Octagon Joint. Price per pair, - $2.25

Can supply any make or number from any catalogue at manufacturers' prices.

EXCAVATORS.

Octagon, Steel Handles, best quality, per dozen, nickel plated, - $2.00

ARTICULATORS.

From - - - - - - .90 to $4.00 each

RE-DISTILLED MERCURY.

Put up in four ounce vials, - - - - - each .50

MODELLING COMPOSITION.

S. S. White's 1, 2, 3, 4, per pound, - - -	75
Hood & Reynold's 0, 1, 2, 3, per pound, - - - -	75

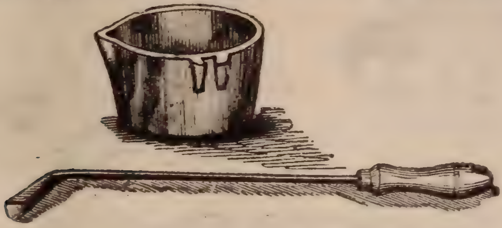
GUTTA-PERCHA FILLING.

The S. S. White M'f'g. Co's Pellets, per ounce, - -	$4.00
Put up in boxes containing ½, ¼, 1-10, 1-20 ounces.	
Caulk's Diamond Pellets, per ounce, - - - -	$2.00
Put up in boxes containing 1-4, 1-8 and 1-16 ounces.	

FOWLER'S TEMPORARY STOPPING.

Price per ounce, - - - - - - .50

Ladles and Handles.



We make three sizes of Ladles; one handle will fit each Ladle, and removed when the Ladle is placed on the fire.

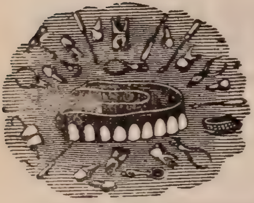
No. 1, is 5 inches diameter, and 3 inches deep.
" 2, " 4¾ " " " 3 "
" 3, " 4½ " " " 2½ "

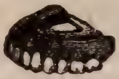
PRICE.—2 Ladles, (Nos. 2 and 3,) with 1 Handle	75
Nos. 2 and 3 Ladles, without handle, each	25
No. 1 large " " " "	40
Handles of wrought iron, each	25

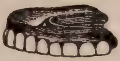
SNOWDEN & COWMAN MFG. CO.,
No. 9 W. Fayette St., Baltimore.

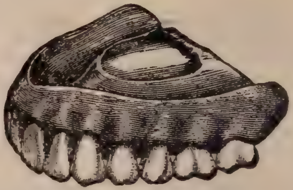
Dental Cuts---Electrotypes.

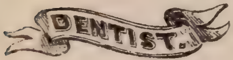
For Business Advertisements.


No. 1....60 cents.

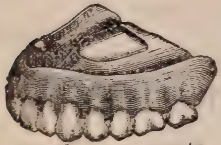

No. 7....40 cents.

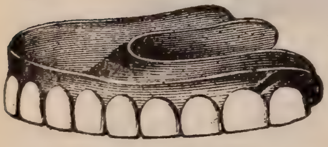

No. 4....40 cents.

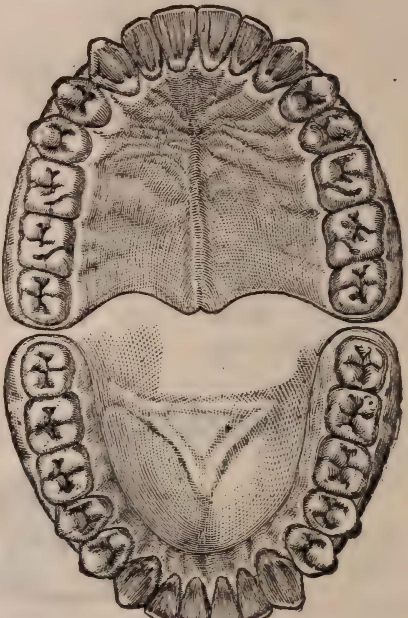

No. 2....75 cents.

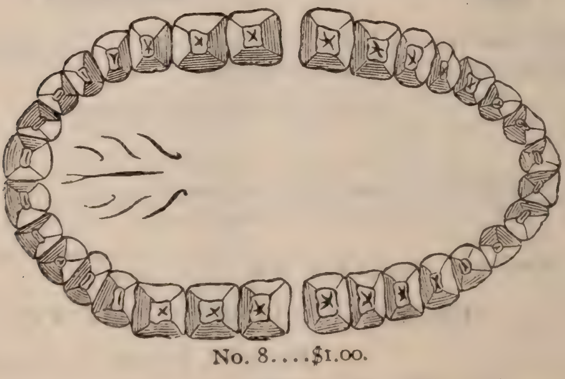


No. 3....40 cents.


No. 6 ....55 cents.


No. 5....75 cents.


No. 9....$1.20.


No. 8....$1.00.

Gray's Glycerine Tonic Comp.

(Glycerine, Sherry Wine, Gentian, Taraxacum, Phosphoric Acid, Carminatives.)

Formula DR. JOHN P. GRAY.

Increasing demand is the best evidence that physicians and dentists are appreciating the Unique Value of this preparation.

It neutralizes acidity of the stomach, checks fermentation, and is unexcelled as a General and Nerve Tonic.

In Pulmonary and Bronchial affections, Nervous Prostration, Melancholia, Anaemia and Debilitated Conditions it has no superior.

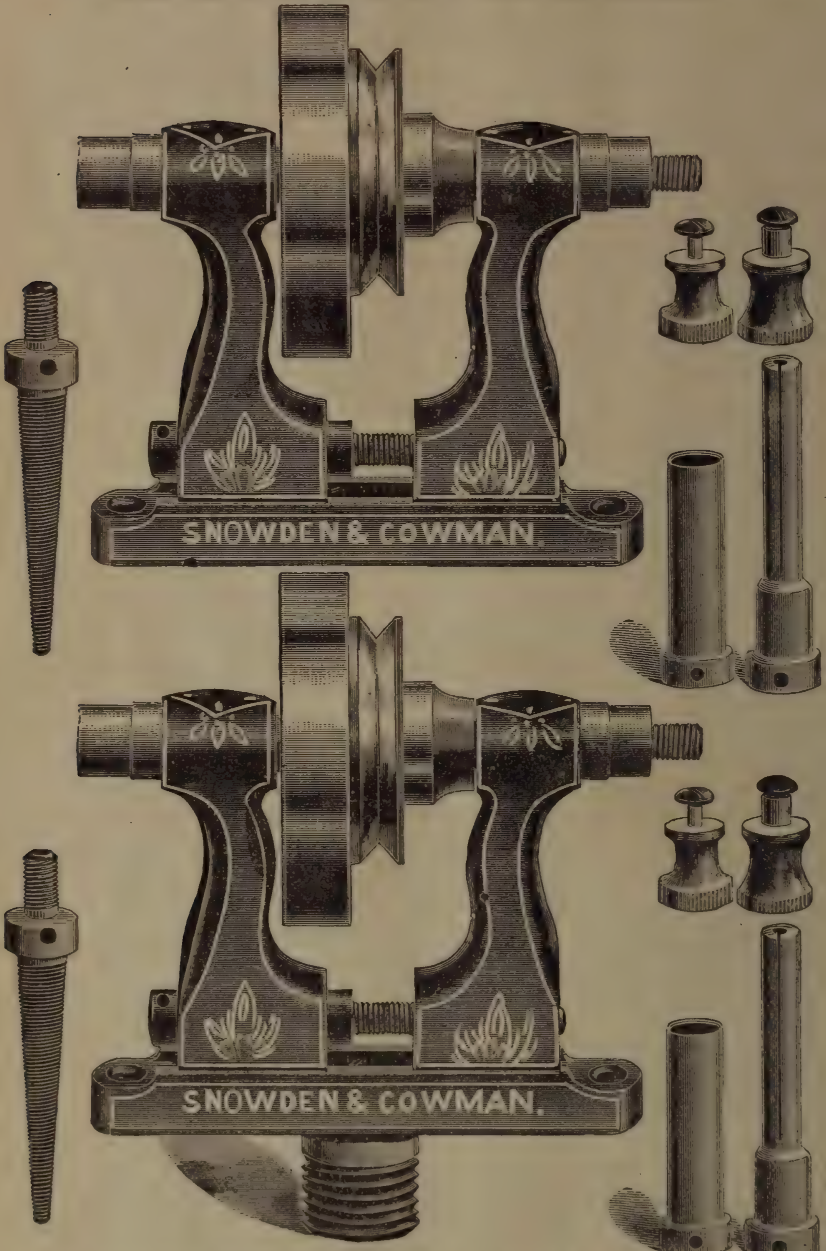
THE PURDUE FREDERICK CO.,

Write for Samples. No. 52 West Broadway, New York.

NO MORE LOST MOTION!

New Improved Cone Lathe Head.

CAN BE USED WITH ANY DRIVING WHEEL.


SNOWDEN & COWMAN.
SNOWDEN & COWMAN.

All lost motion or wear can be taken up by the simple adjusting of screw on base. It is made very strong and durable. It runs easier than any Lathe Head on the market. Fitted to run on either U. S. Lathe Stand or the American Lathe Stand. PRICE, with **5** Chucks, - - **$7.00**

SNOWDEN & COWMAN MFG. CO., 9 W. Fayette St., Baltimore, Md.

JULY, 1897.

THE AMERICAN JOURNAL OF DENTAL SCIENCE.

EDITED BY

F. J. S. GORGAS, M. D., D. D. S.
RICHARD GRADY, M. D., D. D. S.

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Communications intended for publication, and exchange journals and papers, should be addressed to the Editor of The American Journal of Dental Science, No. 845 N. Eutaw St. Baltimore, Md. All letters relating to the business of the Journal, or containing cash remittances, to be directed to Snowden & Cowman Mfg. Co., 9 W. Fayette Street, Baltimore, Md. Articles for publication should be received by the Editor at least two weeks previous to the first of the month on which the number in which it is designed for them to appear is issued.

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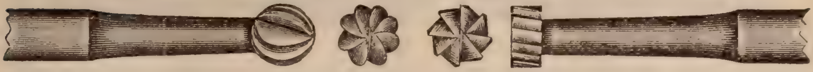

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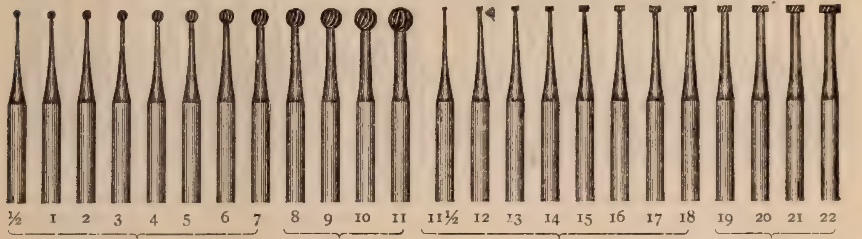

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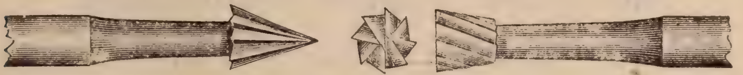

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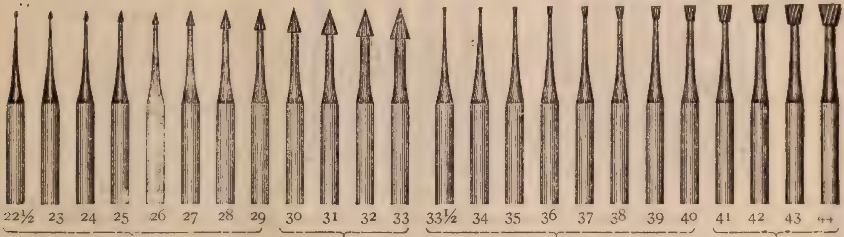

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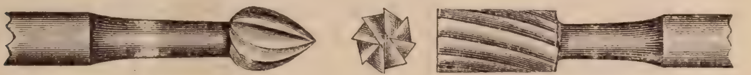

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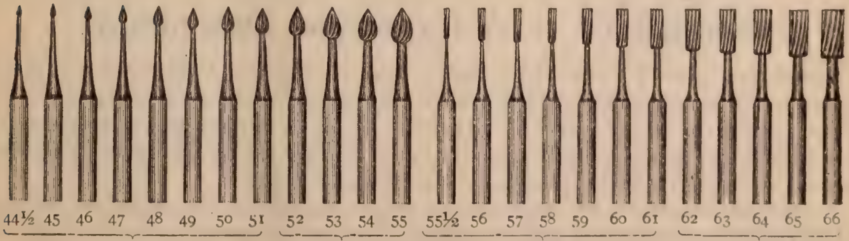

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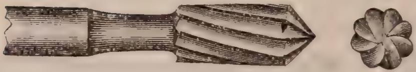

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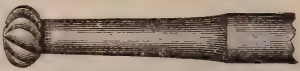

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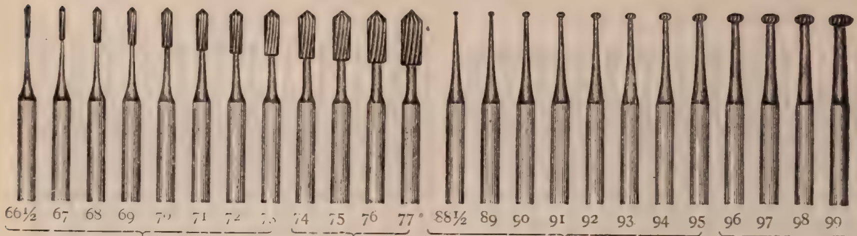

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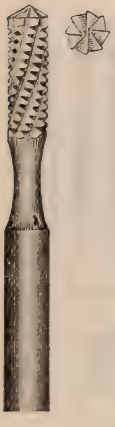

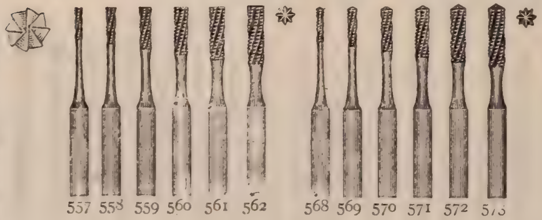

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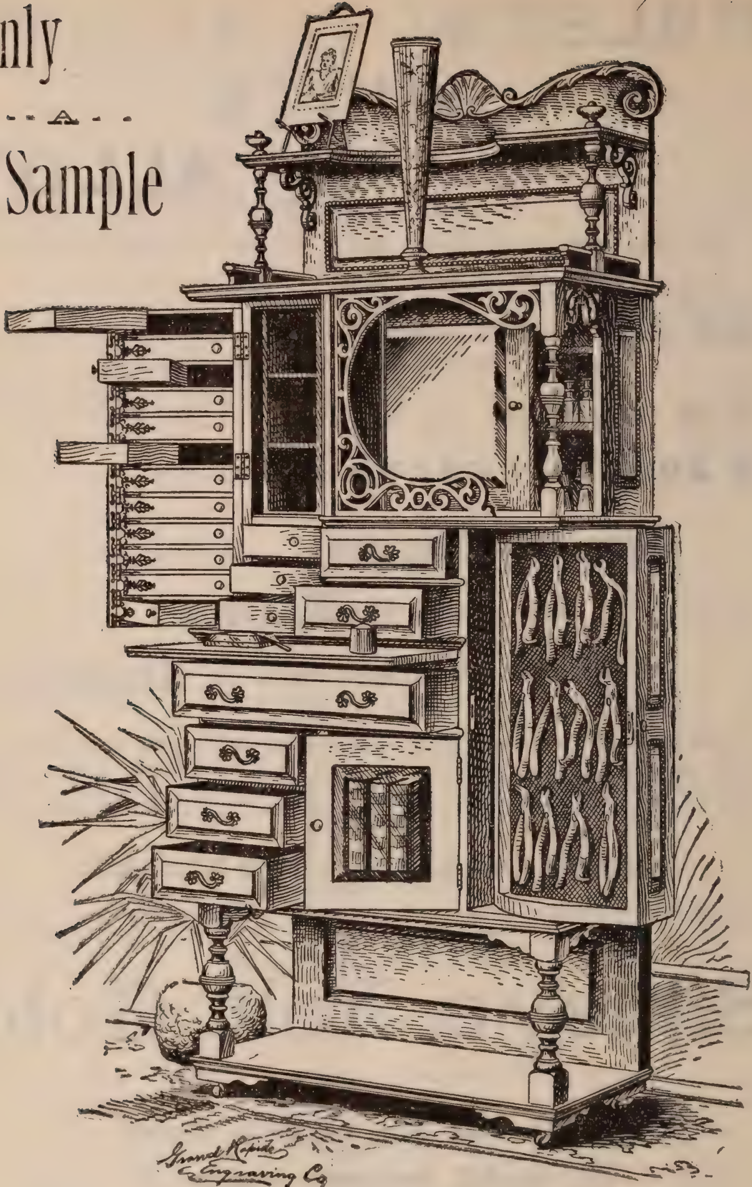

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THAT

CAULK'S SPECIALTIES,

Alloys, Cements and Gutta Perchas

Need no introduction to the profession, as they have been before you TWENTY years.

THEY RANK FIRST AS YOU KNOW.

OBTAINABLE AT YOUR DEPOT.

L. D. CAULK,

1831-1833 Chestnut Street, - - - PHILADELPHIA, PA.

LABORATORY, CAMDEN, DELAWARE.

Artificial . . . TEETH.

TO THOSE dentists who have for many years used and approved the teeth bearing the stamp of H. D. Justi, it might seem unnecessary to further advertise them, but for the information of the great number of young men who are annually entering the ranks of the Dental Profession, we wish to call attention to a few points in which we claim superiority for these teeth over all others: . .

IN FORM these will excel both in variety and in close imitation of nature, not only in her ordinary average styles, but also in what might be called her eccentricities of form and arrangement. . .

IN COLOR we have succeeded in most nearly securing that bony texture which is so distinct from the porcelain-glitter we see in so many artificial teeth, and in the delicate blending of the shade they are eminently satisfactory. . . . .

IN STRENGTH they have the highest degree possible consistent with maintaining the other qualities required. It would be quite possible to make teeth much stronger by disregarding beauty of form, and making a coarse, thick block, but this ought to be, and doubtless would be, at once rejected by both dentist and patient. . . .

IN ADAPTATION to the alveolar ridge, great care has been taken to meet every requirement, and finally we ask for the product of our factory only a careful criticism and fair trial to convince the profession that we are fully justified in the superiority we claim for it.

H. D. Justi & Son,

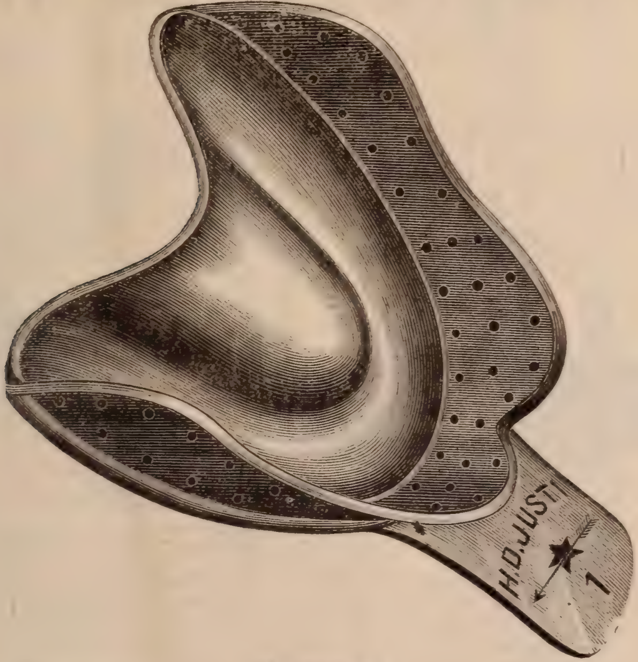
PHILADELPHIA,
1301 and 1303 Arch Street.

CHICAGO,
66 Madison Street.

THE WEIRICH

New Flexible

RIM IMPRESSION TRAYS.



[PATENTED.]

WHILE plaster impressions are acknowledged to be the only reliable ones, every dentist has found a serious difficulty in obtaining them, owing to the tendency of the plaster on the outside the maxillary ridge to break away when the impression is withdrawn from the mouth. This usually breaks into small pieces, always difficult and often impossible to replace. From this cause sometimes several impressions have to be taken before one sufficiently perfect for use can be obtained.

In the New Tray this trouble is removed. The plaster is mixed and applied in the usual way; when withdrawn it will break away, but the pieces, adhering to the rubber, will come directly back into their proper places, and the impression can at once be brought into perfect shape. This result is obtained by making the rim of the Tray of rubber, as shown in the cut. This rubber is fastened in a groove in the base of the Tray, and is sufficiently rigid to support the plaster while taking the impression, and yet flexible enough to permit the impression to be withdrawn without difficulty.

These upper Trays are five sizes, No. 1, the largest, being the same as the common No. 1 Tray; the others are evenly graded to No. 5, which is small enough for any case likely to be presented.

This invention has been tried by a number of dentists, and pronounced a great success, saving them much annoyance and trouble, and giving them far more perfect results.

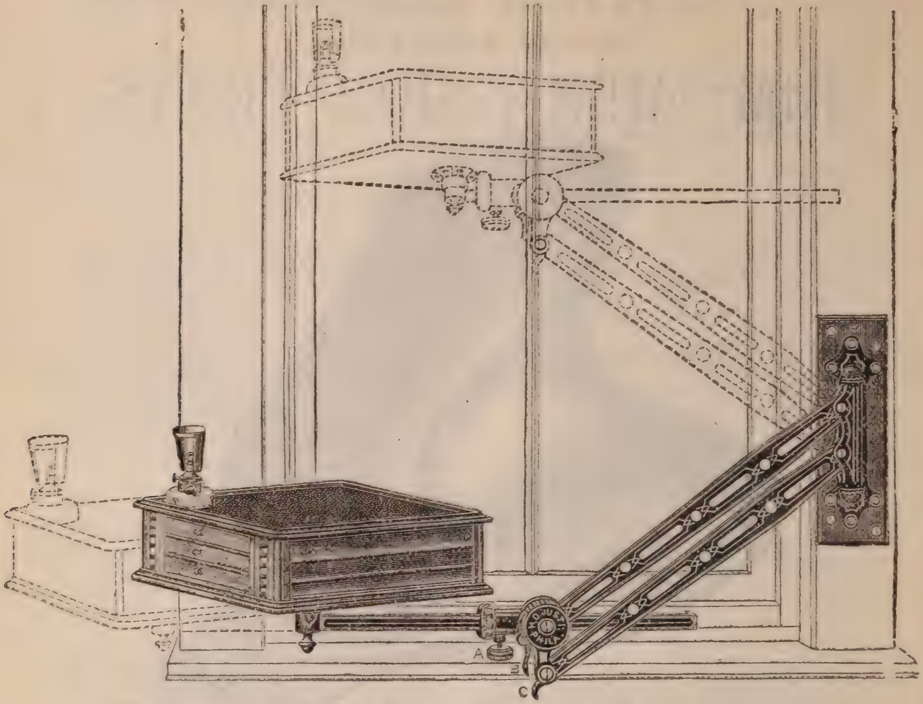
PRICE.. each, $0.75

H. D. JUSTI & SON,

PHILADELPHIA: and 1303 Arch St.

CHICAGO: 66 Madison St

The HANDY BRACKET.



The success which this Bracket has achieved and the universal popularity and demand for it, has far exceeded our highest expectations; having made a number of improvements since its original introduction, we considered it essential to give a new illustration of it as it is now made, accompanied by the Grigg Table.

The Bracket being so well known and fully described before we deem it unnecessary to repeat, but wish only to add, that when we stated this Bracket to be one of the most convenient ever placed on the market, we were not wrong in our assertion, as its great sale has since demonstrated.

PRICES

Handy Bracket with Table No. 1, ...	$12,00
" " " " No. 2, Lamp and Shield, . .	14.00
" " " Grigg Table, " " " . . .	24.00
" " " Allen " Plain Sides, Lamp and Shield,	18.00
" " " " " Glass " " " " .	21.00
Small Table No. 1, covered with Cloth or Leather, . . .	3.00
" " No. 2, " " " " Lamp and Shield,	5.00
Allen " Plain Sides " " " " " " "	9.00
" " Glass " " . " " " " " "	12.0
Grigg " covered with Cloth or Leather, Lamp and Shield,	15.0

H. D. JUSTI & SON,

PHILADELPHIA, - - CHICAGO,

1301 and 1303 Arch St. 66 Madison St.

DIRECTIONS FOR USE OF

BLAIR'S VAPORIZER

FOR THE TREATMENT OF PULPLESS TEETH.

1. If possible, always adjust rubber dam, or usual method of keeping tooth dry. Never use a broach or drill in canal until treated with vaporizer.

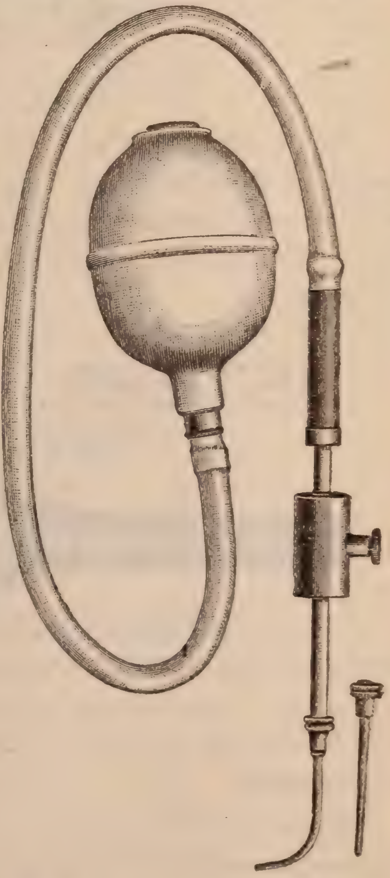
2. Clean out pulp chamber and expose openings of nerve canals; then introduce one of the points in opening of canal, and force the gas generated in the vaporizer into the canal until the root is saturated with the gas. Clean out canals thoroughly when possible, then treat again and fill immediately, if there is no indication of pus coming through the end of roots.

3. If there is a blind abscess in the tooth, stop up lightly with cotton and have patient return on third day. Three treatments will generally cure any case of blind abscess.

4. If there is a fistulous opening, try and force gas through same. One application is often all the case will require.

Open screw top on vaporizer and place small quantity of the iodoform (which accompanies each instrument) in chamber; then heat sufficiently, not too hot, to cause a thin stream of vapor to issue, on pressure of bulb, from point of vaporizer needle. Then insert in canal and force gas into same.

This gas will penetrate to every point in the canal and will absolutely destroy every vestige of animal life.



PRICE, EACH, $3.50.

MORRISON BROS., Sole Agents,

NASHVILLE TENN.

Hawe's Moulding Flasks.

Fig. 1.

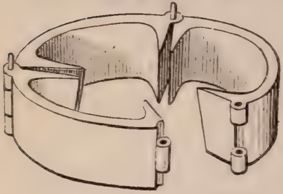


Fig. 2.

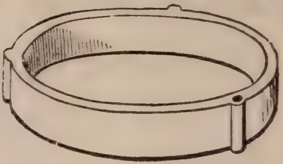


Fig. 3.

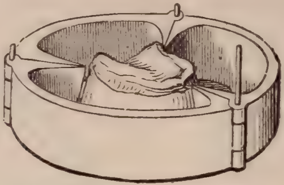
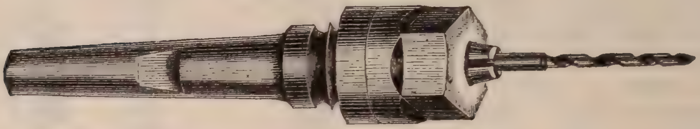


Fig. 1 represents the lower section of the Flask, slightly opened, to show the Joints. Fig. 2 is the upper section. When ready for use, the lower section is closed and confined by a Pin, and the Plaster Model placed in it, as represented in Fig, 3.

Price - - - - - $3.00

STEEL CHUCK.

PATENTED.



The above cut represents a very complete SELF-CENTRING, THREE-JAWED STEEL CHUCK, carefully made, durable and convenient. The wearing parts are hardened ; the jaws have a good bearing on the drill, and hold securely either a straight or tapered shank.

It carries Drills, Burs, or Corundum Points of the DENTAL ENGINE, one-eighth of an inch in diameter, and under, and made to fit our AMATEUR, UNITED STATES SHORT SPINDLE AMERICAN SHORT SPINDLE, and HAND and FOOT LATHES.

Price, with Wrench, - - - $2.00.

REDUCED PRICES

OF

Dental Machinery of Our Own Design.

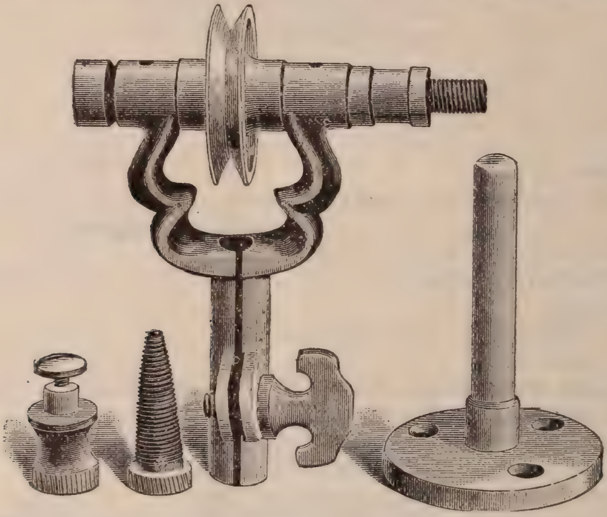
Amateur Lathe—Complete,	$25 00
" " Head, &c. all above stand,	13 00
" " Stand and Cord,	13 00
United States Lathe—Long Spindle,	15 00
" " " Short Spindle,	15 00
" " " Stand and Cord,	11 00
American Lathe,	14 00
" " Extra Large Driving-Wheel,	15 00
Diamond Lathe—Complete,	13 00
" " Fly Wheel,	7 00
Fly-Wheel No. 1,	7 00
Portable Hand or Foot Lathe—Complete,	5 50
" " " " Without Foot Attachment,	5 00
Quadrant Hand Fly-Wheel Lathe,	4 50
Hand Fly-Wheel Lathe,	4 50
Hand Lathe,	4 00
Diamomd Lathe Head—Polished Brass,	6 00
Socket Table Head,	4 50
U. S. Table Head—Holes in base to screw to table,	4 00
Engine Lathe Head—Nickel Plated,	4 00
American Lathe Head—Holes in base to screw to table,	4 00
Ladles and Handle—Two Ladles and one Handle,	75
Extension Brackets—Weight only five pounds,	6 00
Patent Portable Head-Rest—Nickel Plated,	10 00
Portable Head-Rest—Weight only four pounds, Bright Parts Nickel Plated,	4 50
Soldering Lamps,	90
Flask Presses—Well made and very strong—No. 1 Old Style,	1 50
" " " " " " " No. 2 New Style,	1 50
Ingot Moulds—Broad base with handles, No. 1,	2 25
" " " " " " No. 2,	2 75
" " " " " " No. 3,	3 25
Bailey's Moulding Flasks—Per set of 2,	75
Steel Chuck,—to fit our Amateur United States, American, Short Spindle and Hand and Foot Lathe,	2 00
Welch's Nerve Paste,	1 00
Britannia Impression Cups—long handles, various styles and 29 sizes--each,	25

☞ **We make no charge for Boxing any of the above goods.**

SNOWDEN & COWMAN MFG. CO.

9 West Fayette Street, Baltimore, Md.

ENGINE LATHE HEAD FOR BRIDGE AND CROWN WORKERS.



THIS LATHE HEAD CAN BE ATTACHED TO SHAW ENGINE BY SLIPPING SOCKET OVER STANDARD AND TIGHTENING THUMB SCREW. IT IS VERY LIGHT AND NEATLY NICKEL PLATED. IT RUNS VERY SMOOTHLY AND LIGHTLY. IT ALSO CAN BE MOUNTED ON TABLE AS SHOWN IN CUT BY THE SMALL ATTACHMENT. . . . .

PRICE COMPLETE - - $4.00.

VULCANIZERS

Our Own Manufacture.

WE ARE MAKING 3 STYLES.

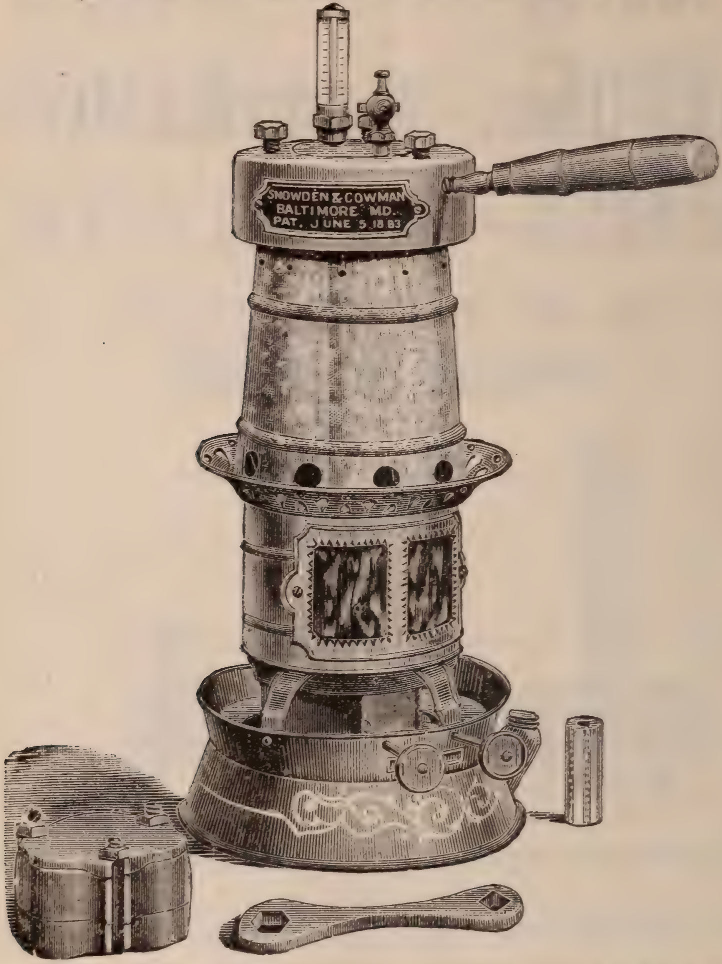
Complete with Coolidge's Gas and Time Regulator, . .	$25 00
Complete with Gage and Blow-off Cock for Gas or Kerosene, ...	21 00
Complete with Thermometer and Blow-off Cock for Kerosene or Gas, ...	18 00
Vulcanizers complete with Two Brass Flasks, instead of Iron Flasks, adds	1 50
Vulcanizers complete without Two Iron Flasks, deduct	1 50
Vulcanizers complete, less Kerosene Stove, deduct . .	1 70
Vulcanizers complete, less Gas Stove, deduct	1 00
Large Iron Flasks, each	1 00
Large Brass Flasks, each	1 50

SNOWDEN & COWMAN MFG. CO.

9 W. Fayette Street, BALTIMORE, MD.

SNOWDEN & COWMAN MFG. CO.'S

New Patent Vulcanizer.

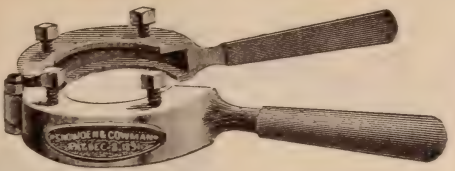


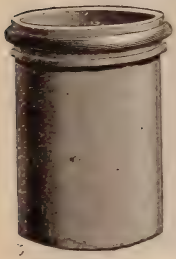
Complete for Kerosene or Gas, with Two Large Malleable Iron Flasks, *$18.00*

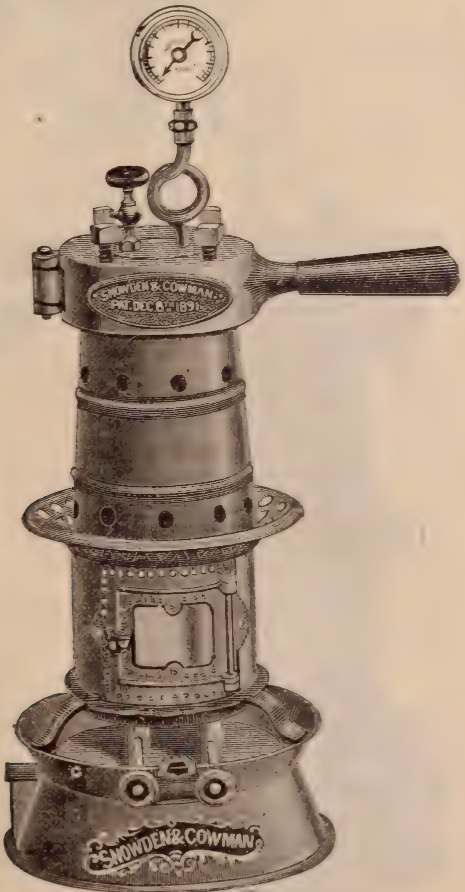
Gas Stove.

PATENTED DEC. 8, 1891.

Snowden & Cowman Mfg. Co.'s Hinged Clamp Vulcanizer.



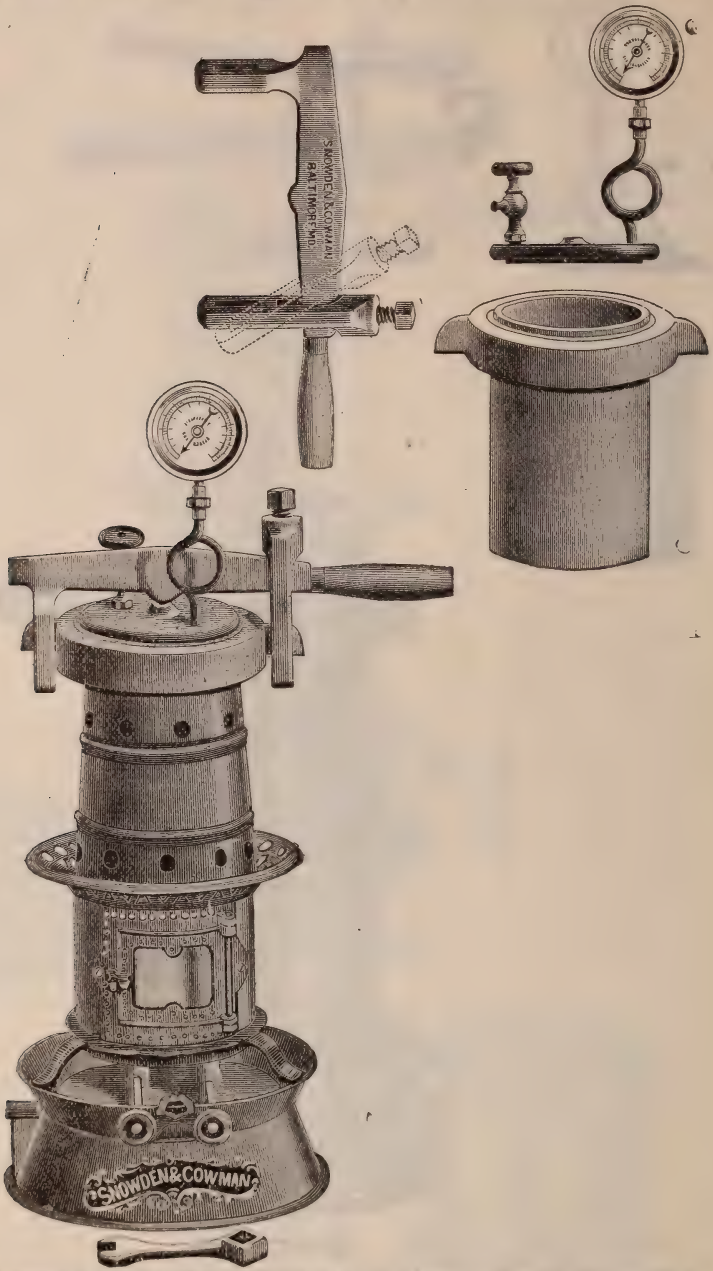




Price complete with 2 Flasks Improved for Gas or Kerosene with Guage as represented,.......................... $21.00
With Thermometer and without Guage,........... 18.00

CIRCULARS ON APPLICATION.

Snowden & Cowman Mfg. Co.'s Improved Cross-Bar Vulcanizer



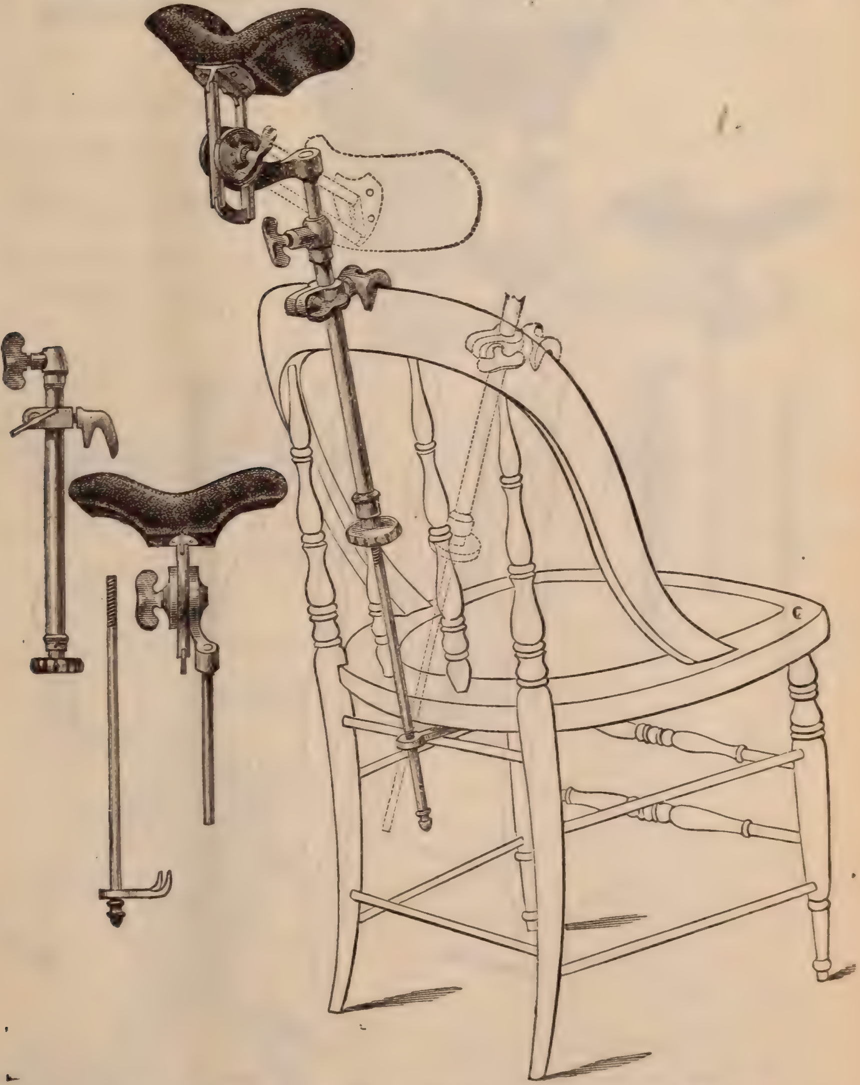
Price complete with two Flasks for Gas or Kerosene, with Guage as represented, ... $21.00
With Thermometer and without Guage,...................... .... 18.00.

CIRCULARS ON APPLICATION.

Snowden & Cowman Mfg. Co.'s

—NEW—

Portable Head-Rest.



PRICE, Full Nickel Plated, - - $10.00

—MANUFACTURED AND FOR SALE BY—

SNOWDEN & COWMAN MFG. CO.

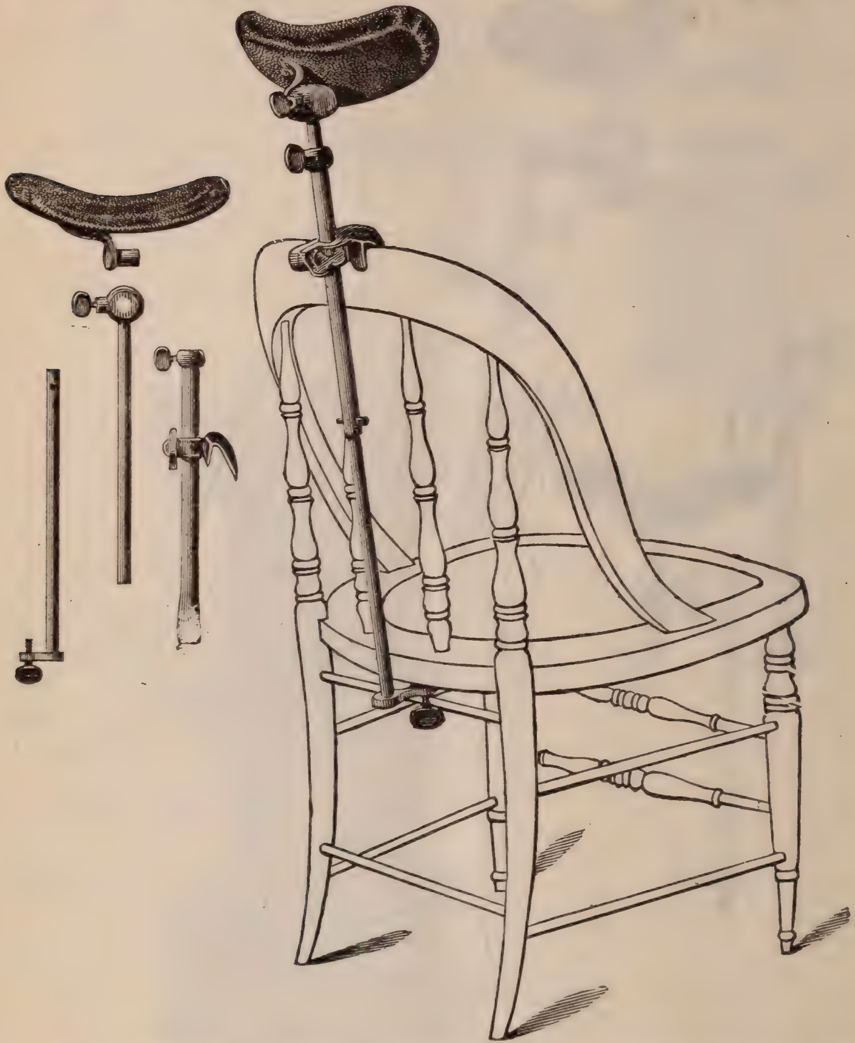
9 West Fayette Street Baltimore Md.

Price Reduced

SNOWDEN & COWMAN MFG. CO.'S

IMPROVED–

Portable Head-Rest.



This Head-Rest can be attached to any chair, is very firm, and can be raised, lowered or moved backward or forward without interfering with attachment to the chair. Handsomely painted and bright parts nickel-plated.

It weighs only 4 lbs., and occupies a space only of 13 x 4 inches. PRICE, $4.50.

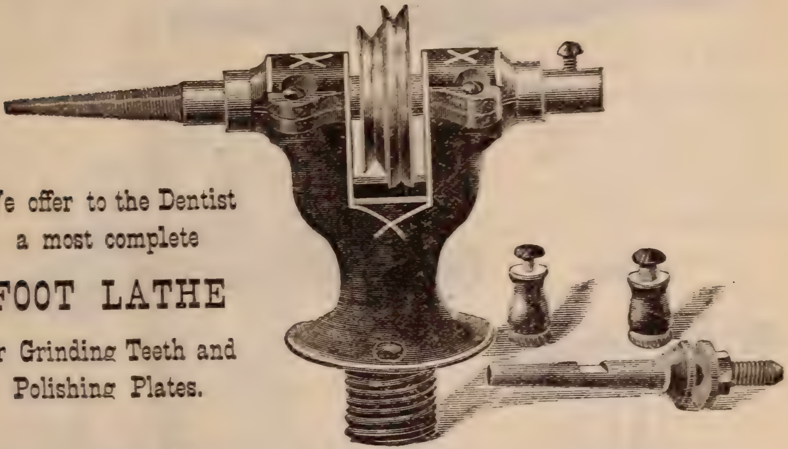
Price Reduced.

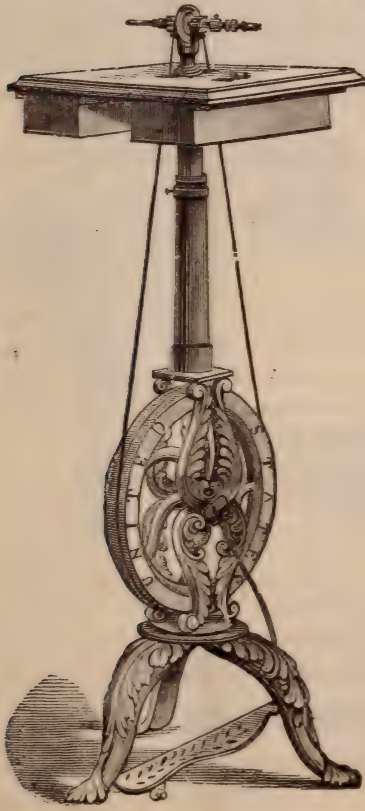
UNITED STATES LATHE.

We offer to the Dentist
a most complete

FOOT LATHE

for Grinding Teeth and
Polishing Plates.





It has been gotten up in a superior manner, great care having taken to make it durable and efficient. It has a movable column and table, which is capable of being elevated eight inches, to accommodate the operator in either a sitting or standing posture.

It can be packed in a box sixteen inches square, and can be set up in a few minutes, presenting a very neat and pleasing appearance, suitable for the office or laboratory. It is finished in bronze, and runs very light and steady.

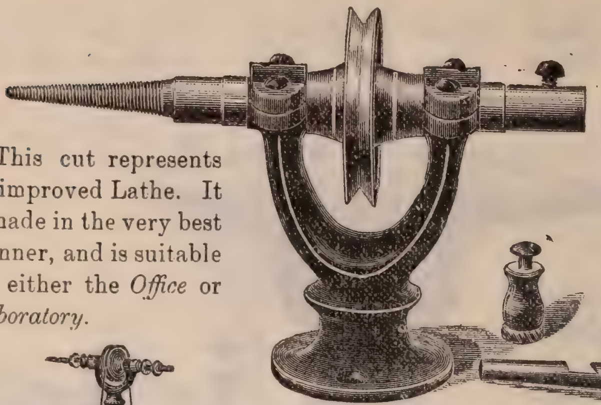
Price of Lathe complete with Short Spindle, as per cut,	$15.00
Price of Lathe complete with Long Spindle,	15.00
Price of Stand only, including Cord and and Coupling,	11.00

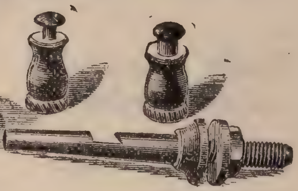
Snowden & Cowman Mfg. Co.,

9 W. Fayette Street,

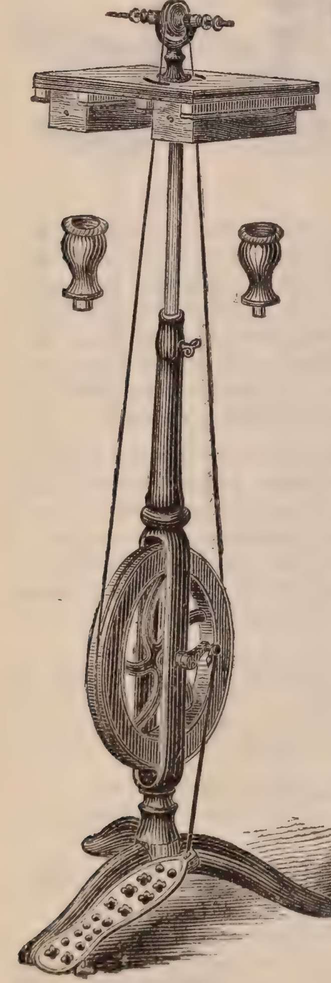
BALTIMORE, MD

AMERICAN LATHE, PRICE REDUCED.





This cut represents an improved Lathe. It is made in the very best manner, and is suitable for either the *Office* or *Laboratory*.



It has a solid spindle, one end of which is a taper screw for brush or felt wheels, and also, a space for a large corundum wheel. The other side of the spindle has a space for a large corundum wheel and a screw to receive the chucks, on which very small corundum wheels can be placed

It has a movable column and table, which is capable of being elevated ELEVEN inches, to accommodate the operator in either a sitting or standing posture.

Either end of the spindle can be thrown towards the operator, if more convenient, by the set screw at the top of the column.

We also make for this Lathe a Socket Spindle—similar to our U. S. Large Short Spindle.

Price of Lathe, as per cut, with two Chucks, - - - -	$14.00
Price of Lathe, with Socket Spindle, with two Chucks, - -	14.00
Price of Lathe, with Extra Large Driving Wheel, - - -	15.00
Chucks, extra, - - - -	.15

☞ No charge for Boxing.

SNOWDEN & COWMAN MFG. CO.,

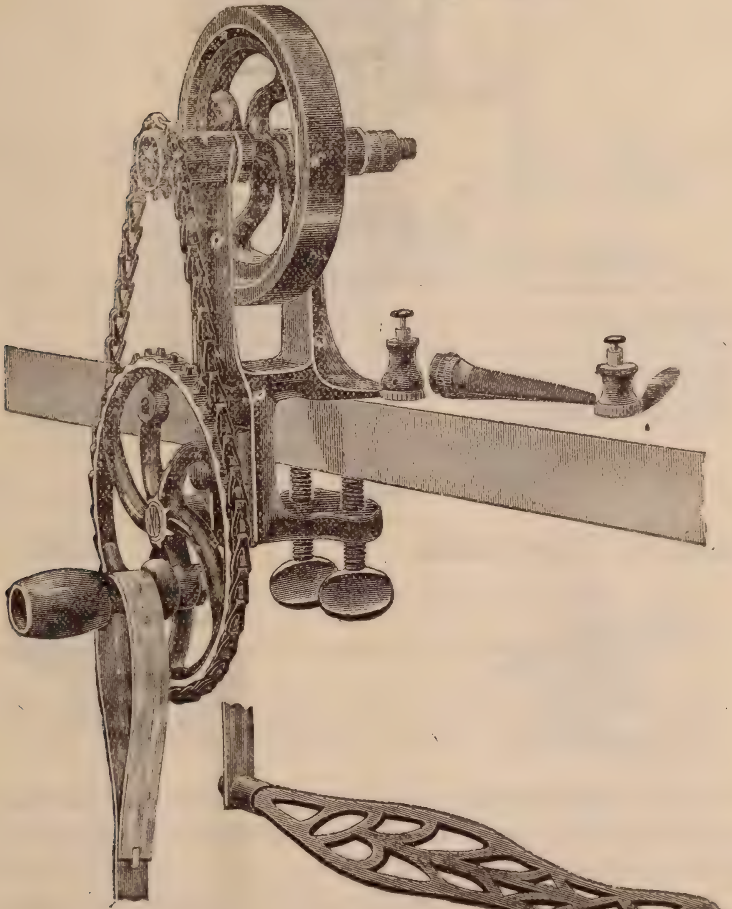
9 W. Fayette Street, Baltimore

SOMETHING NEW FOR TRAVELLING DENTISTS.

LINK CHAIN LATHE,

TO BE USED EITHER BY HAND OR FOOT POWER.

PRICE, - $7.00.



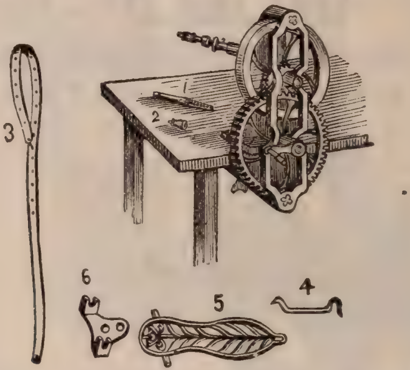
The Fly Wheel with Spindle is driven with an Endless Chain and makes very little noise, as it is propelled by large and small Sprocket Wheels, this gives it a very steady movement and does not require as much power as a geared lathe. It is fastened to table or bench by two Thumb Screws which make it impossible to turn when both are screwed up. It is very light and can be carried in a small satchell.

Snowden & Cowman Mfg. Co.,

9 W. Fayette Street, BALTIMORE, MD.

PRICE REDUCED.

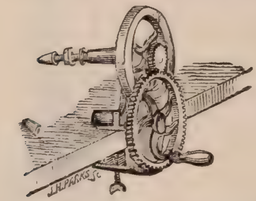
Portable Hand or Foot Lathe.



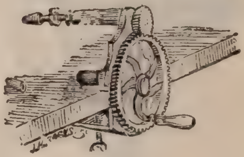
The above is a cut of a PORTABLE HAND OR FOOT LATHE, which is very efficient, manufactured for the traveling dentist; weighs under 7 pounds, and occupies the space of 6 by 9 inches. Members of the profession who have seen it pronounce it first rate.

Price, complete, - - - - -	$5 50
Without Foot Attachment, - - -	5 00

Hand Fly Wheel Lathe.



Hand Lathe.



HAND FLY WHEEL LATHE.—It is intermediate between the Hand Lathe, and the Hand and Foot Lathe; it weighs only three pounds and is a first rate Lathe. - - PRICE, $4 50

HAND LATHE.—It is small, strong and durable, and weighs only two and a quarter pounds; we have sold a large number of these Lathes,—giving great satisfaction. - - PRICE $4 00

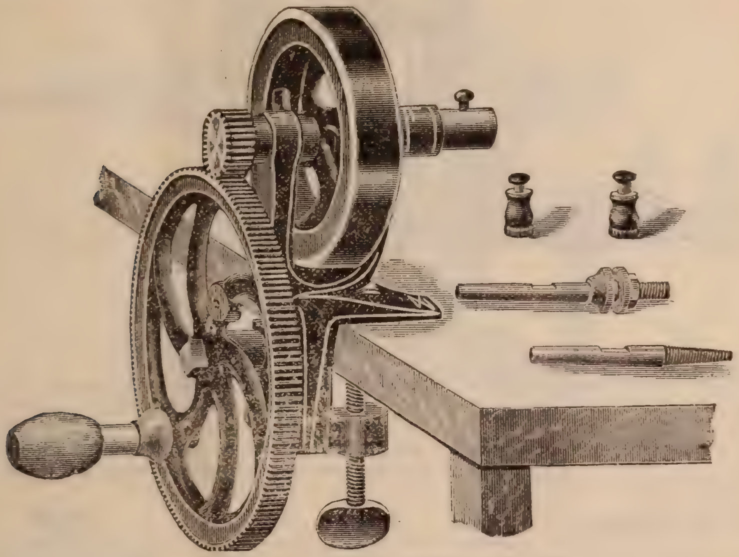
☞ All of the cog wheels of our Lathes are turned and cut on a machine, and are uniform, which makes them run true and with little noise.

SNOWDEN & COWMAN MF'G CO.,

No. 9 West Fayette St., Baltimore.

NEW HAND FLY WHEEL LATHE.

This Lathe is made larger and heavier and can be used with foot. It runs very steady and makes a good lathe for either Office Laboratory or to carry around. It is very neat.



PRICE, - - - - -	$5 00
" with Foot Attachment and Strap,	5 50.

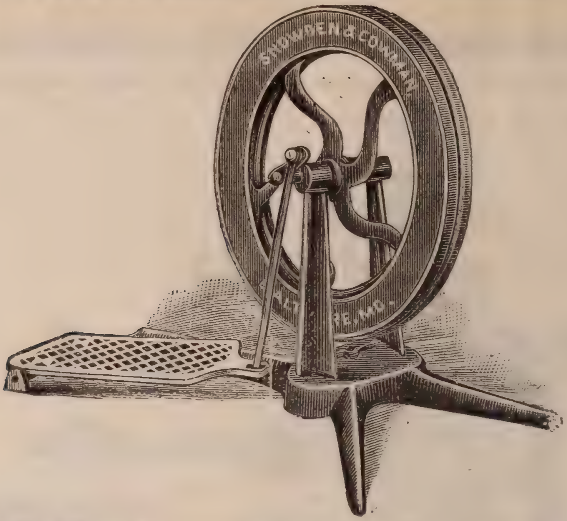
'The proof of the pudding is in the eating."

If the experience of dentists generally did not prove OUR GOLD AND PLATINA ALLOY a superior filling they would not be willing to pay nearly double more for it than the price of common amalgams. I suppose there is not another alloy or amalgam so generally used by our better class of dentists.

Welch's Alloy, 1 oz. $3.00; 2 oz. $5.50, 4 oz. $10.00; 10 oz. $22.00.
Welch's Amalgam, 1 oz. $2.00; 2 oz. $3.50; 4 oz. $7.00; 10 oz. $15.00.
Welch's Oxiphosphate, large $1.50; medium $1.00.
Liquids or powders, large 75 cts.; medium 50 cts.

T. B. WELCH, - - - - Vineland, N. J.

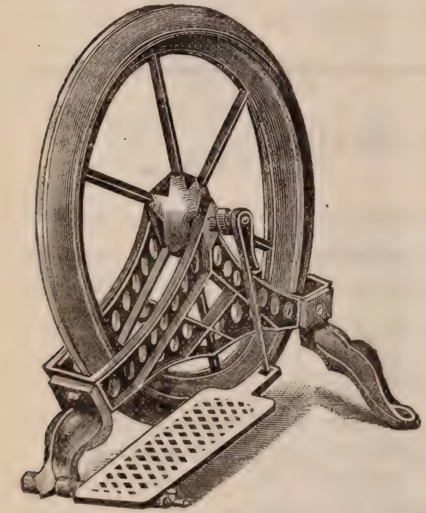
FLY WHEEL, No. 1, NEW.—Price Reduced.



This Fly Wheel weighs 30 lbs., with diameter of wheel 15 inches. The stand is the stiffest and steadiest of any driving wheel in the market. Owing to the position of the feet and the peculiar arrangement of the treadle, the wheel has an immense power and is very light running. In boxing remove pin that connects treadle with rod and fold treadle by side of the wheel. Weight complete, 46 lbs.

Price Boxed, - - - - - - **$7.00**

DIAMOND FLY WHEEL.—Price Reduced.



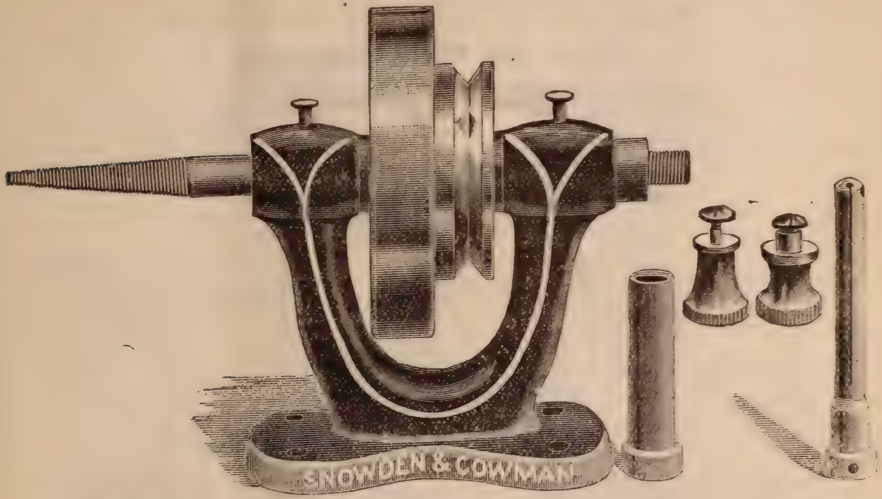
This fly-wheel is eighteen inches in diameter, with wrought iron spokes, in an iron frame, complete in itself, can be set any where, and runs very steady.

It has sufficient power and speed for any Dentist's Lathe Head. The feet are easily detatched, and all can be packed in a smaller box than any other Fly Wheel of its dimensions in the market.

Price Boxed, - - **$7.00.**

SNOWDEN & COWMAN MFG. CO.,
No. 9 W. Fayette Street,
Baltimore.

OUR NEW LATHE HEAD.

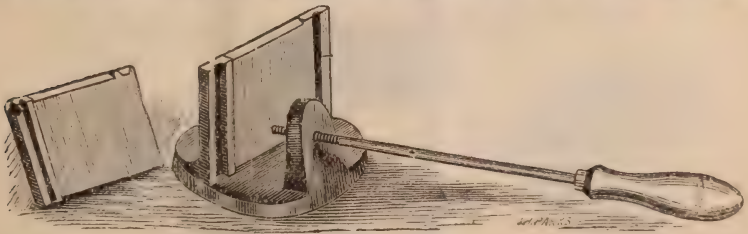


VERY SIMPLE AND EASY RUNNING.
ADJUSTMENT QUICKLY MADE.
VERY DURABLE AND STEADY.

PRICE WITH 4 CHUCKS, - - -	$5.00.

SNOWDEN & COWMAN MFG. CO.'S

INGOT MOULDS.



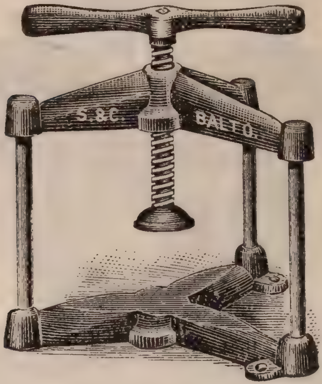
No. 1, will cast a plate from one half of an inch to two inches in width, also a round, half-round and square bar. -	$2.25
No 2, will cast a plate from one half of an inch to two and three quarter inches in width, also a round, half-round and square bar. - - - - - - -	$2.75
No. 3, will cast a plate 3 inches wide and 4 inches long also round, half-round and square bar, -	$3.25

LIBERAL DISCOUNT TO THE TRADE.

Snowden & Cowman Mfg. Co's

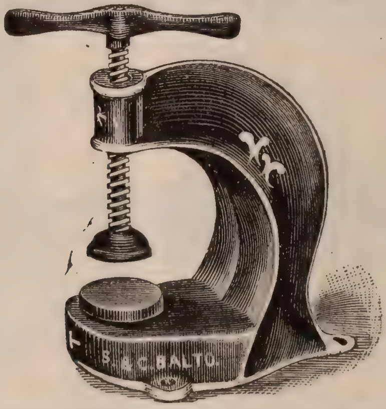
Flask Presses.

No. 1, Old Style Improved.



This Press is intended to close the flask after packing with rubber. It is of great advantage, saving screws and flasks. The upright rods are of wrought iron and the handle of the screw can be detached. They are *well made* and *very strong*, and has been made larger, so that it will take any Flask in the market. Price, - - - - $1.50.

No. 2, New Stvle.

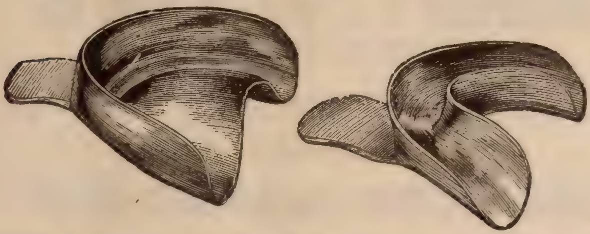


This Press is made of cast iron, very heavy, with steel screw and detachable handle. It has a Pivot Plate to level up the flask, insuring always a central pressure on the flask ; will take any flask in the market. Price - - $1.50

BRITANNIA IMPRESSION CUPS

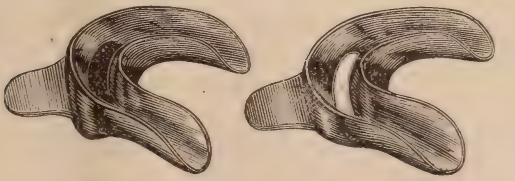
LONG HANDLES.

We Manufacture the following Sizes and Varieties:



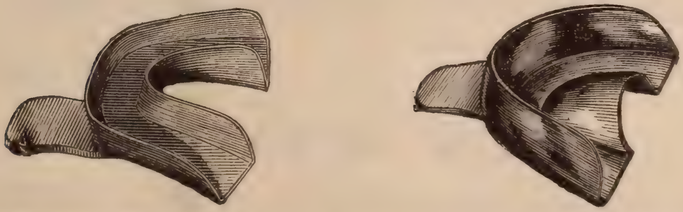
UPPER, Nos. 00, 0, 1, 2, 3, 4, 5, 6, 7.—(No. 00 is the largest size.)
LOWER, " 1, 2, 3, 4, 5. —(No 1 is the largest size.)

PARTIAL LOWER CUPS.



ENCLOSED CAVITY, Nos. 9, 10, 11.—(No. 9 is the largest size.)
OPEN CAVITY, Nos. 6, 7, 8. —(No. 6 is the largest size.)

UPPER AND LOWER CUPS.



PARTIAL UPPER—Flat Bottom, Nos. 8, 9, 10, 11—(No. 8 is the largest.)
FULL LOWER— " " " 12, 13, 14—(No. 12 is the largest.
PRICE..............................Each...................25cts

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ESTABLISHED 1856.

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Lathes, Head Rests, Vulcanizers, Impression Cups, &c.

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DENTISTS' MATERIALS,

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Ney & Co's.		29.00	15.00	7.50	4.
S. S. White's, ¼ Century,	$58.00	30.00	15.00	8.00	4.
“ “ Globe,	58.00	30.00	15.00	8.00	4.
“ “ 1000 Fine,	58.00	30.00	15.00	8.00	4.
R. S. Williams, Cylinders, A,		30.00	15.00	8.00	4.00
“ “ “ B,					
“ “ Rect. Pellets,					
“ “ Standard,					
Watt's Crystal,		32.00	16.00	8.00	4.00
E. Rowan & Co.		29.00	15.00	3.20 per 1-10 oz.	
“ untrimmed,				5.60 per 1-5 oz.	
“				2.90 per 1-10 oz.	

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Nos. 4, 6, 8 & 10, (extra tough)	40 “ “ “

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GREATLY REDUCED.

We keep on hand a large assortment of Teeth of the following Manufacturers, which we

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H. D. JUSTI & SON'S.

	Each.	$10 lots.	$25 lots.	$50 lots.	$100 lots.
Plain Rubber and Plate,	.10	.09½	.09	.08½	.08
Gum Sectional Rubber, Plain Plate, Single Gum Rubber and Gum Plate,	.10½	.10	.09½	.09	.08½

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Per Set 14 Gum or Plain,	$ 1 00
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29 " " " "	25 00
60 " " " "	50 00
125 " " " "	100 00

Less than Set of Fourteen Eight Cents per Tooth.

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Caulk's White Alloy,	3.50 " "
Lawrence's	3.00 " "
Arrington's	2.00 " "
King's,	3.00 " "
Globe Alloy,	2.50 " "
Alba "	2.50 " "

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Weston's Insoluble Cement, one or two colors,	1.00
Dr. Flagg's Plastic Enamel, per Pk'g,	2.00
Fossiline, " "	2.00
Metcalf's Cement, " "	2.00
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1 oz. Package, 1, 2, 3, 4 Colors,	3.00
½ " " any above "	1.50
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Per Box,	1.00
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" T. O. Oliver's Oxy Phos, " "	2.00
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Houghtons's Os-Artificial, " "	75
Poulson's Mineral Plombe, " "	2.50
Dawsons's Mineral Cement " "	1.50
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Per Package, 2 Colors,	1.25
" " 1 "	75
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DENTAL RUBBER.

Ram's Horn Rubber,	per lb.	$2.25
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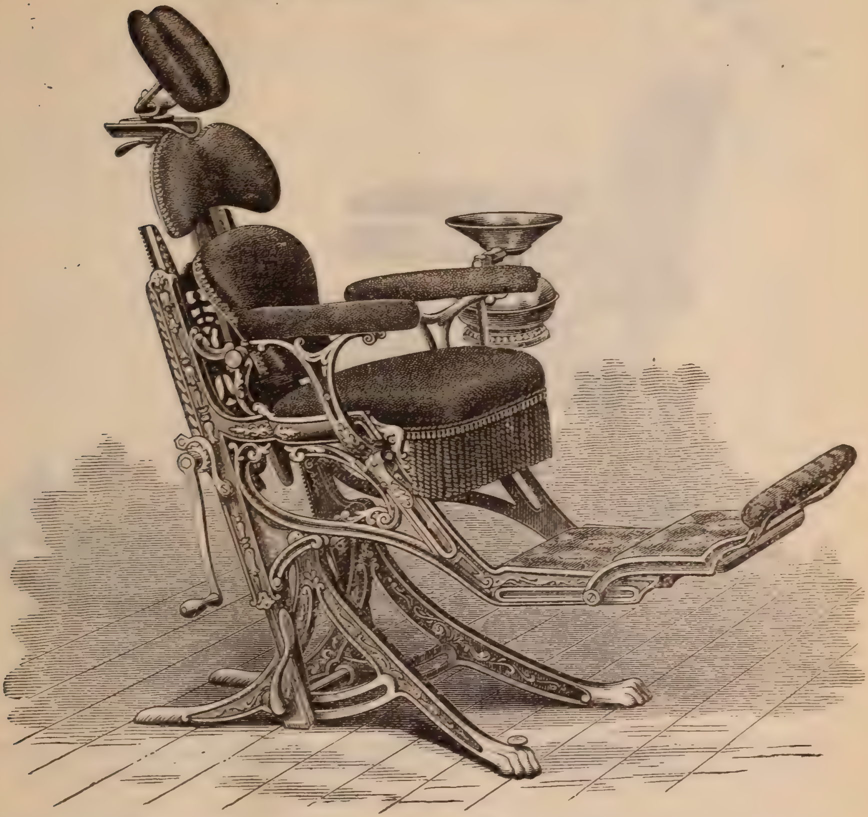
Sam'l S. Whites' No. 1 Improved,	"	2.25
Doherty No. 1,	"	2.25
" " 2,	"	2.25
Sam'l S. White's Bow Spring,	"	2.75
Black Rubber	"	2.50

GUTTA-PERCHA.

Ram's Horn,	per lb.,	$2 25
Sam'l S. White's	"	2.25

THE MORRISON DENTAL CHAIR.

Reissue May 15, 1877. English Patent Dec. 7, 1867.



PRICES.

In best quality Green or Garnet Plush or Plain Morocco	$100.00
In Real Morocco, Embossed	110.00
In finest quality Green or Garnet Plush, puffed and trimmed with Silk Plush, full Turkish Upholstery	120.00

The Illustration shows No. 4 Spittoon, No. 3 Bracket, No. 3 Socket, which are extra and add $8.00 to above price.

BOXING FREE.

STUDENT'S MORRISON CHAIR.

To meet an often-expressed want of a first-class chair at a low price, the Student's Morrison was brought out. It is, in all respects, equal to the regular Morrison chair, except that it is upholstered in a seal-brown corded material, instead of a plush. It presents a very neat appearance, and will wear nearly as well as plush.

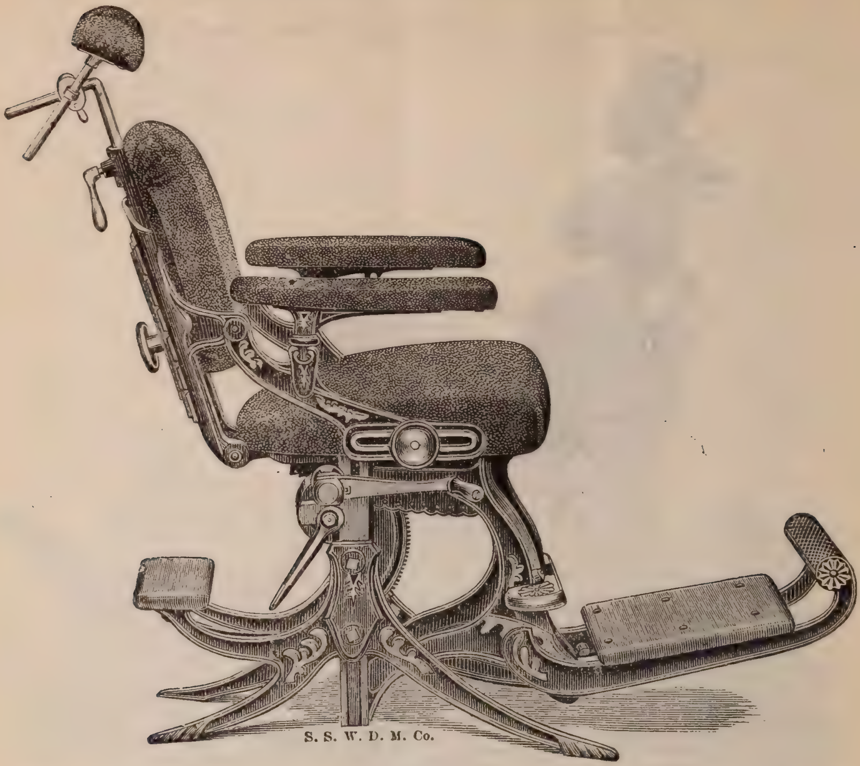
PRICE.

In Corded Upholstery.	$ 85.00

We supply either style of the Morrison Chair, with or without Casters When ordered with Casters, the price is $10.00 extra.

For Sale by Snowden & Cowman Mfg. Co., 9 W. Fayette St., Baltimore.

THE CYCLOID CHAIR



Patented December 28, 1875; July 3, 1877; November 20, 1877; March 9, 1880; May 22 1883. Re-issues July 4, 1876; March 19, 1878; August 27, 1878. Others pending.

This Chair was designed especially to meet a demand for a chair which, while affording a variety of essential movements, could be sold at a lower price than the Wilkerson, The S. S. White Pedal-lever, or the Morrison.

For those who want a low-priced chair which in facility of movements far surpasses anything heretofore offered for the money, the Cycloid is *the* chair. It is strongly built, and the finish and general appearance make it a desirable addition to a well-furnished office.

The lifting mechanism, which has a range of 10 inches, is entirely new and is worked with great ease and rapidity. Should the crank by accident slip from the hand the descend of the Chair is automatically arrested.

The arms are so arranged that they may be rotated out of the way of the operator and yet be of service to the patient.

The foot-board can be adjusted in four positions, and a permanent support for the foot of the operator is placed at the back of the base, the convenience of which will be obvious to those who are in the habit of using a "cricket."

Nearly all of the movements can be made with one hand while standing at the side of the Chair.

Price, upholstered in Corded Material, - -	$ 70.00
" " Best Quality Maroon or Green Plush,	85.00

For Sale by SNOWDEN & COWMAN MFG. CO.

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DENTIST'S CASE BOOKS,

For Recording all Operations in Dentistry

WITH

TITLE PAGE, INDEX or ALPHABET, and the pages numbered, printed on fine paper with a DIAGRAM of the teeth at the top of each page, neatly and substantially bound in muslin.

PRICES.

One Quire Book,	$1 00
Two "	1 75
Three "	2 50
Four "	3 25

DENTISTS' BILL HEADS.

These Bill Heads are printed on fine paper with diagram of the teeth on each, in the following sizes :

No. 1.—Size, 8½ inches wide by 7 inches, Price per 100,	$ 50
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The American Journal of Dental Science,

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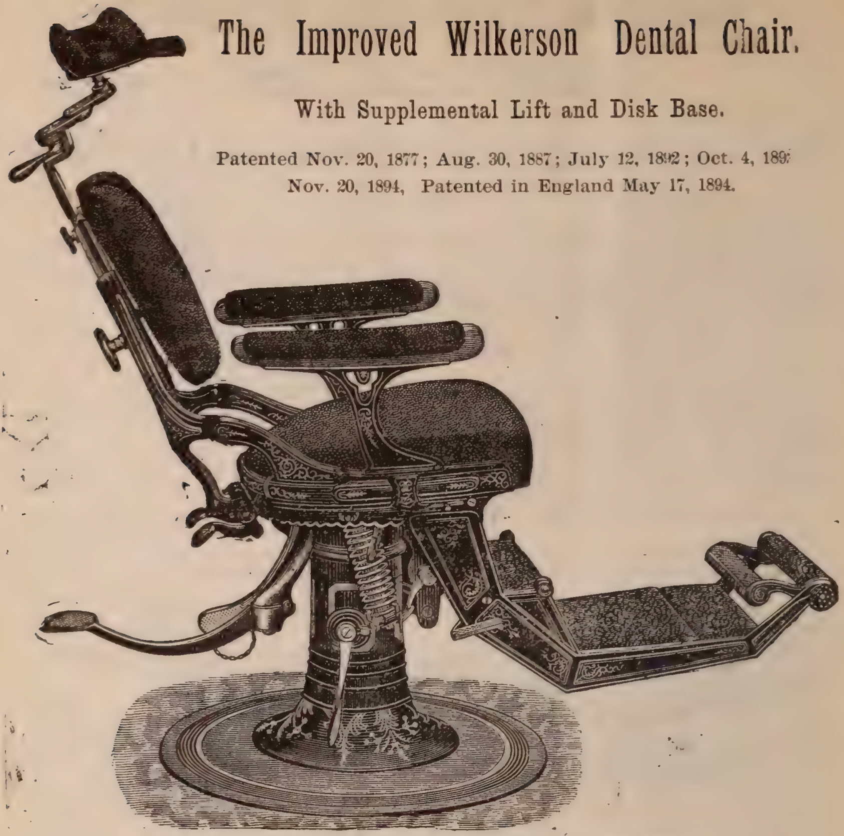
The Improved Wilkerson Dental Chair.

With Supplemental Lift and Disk Base.

Patented Nov. 20, 1877; Aug. 30, 1887; July 12, 1892; Oct. 4, 189
Nov. 20, 1894, Patented in England May 17, 1894.



LOWEST POSITION OF THE CHAIR.

Supplemental Lift for the Wilkerson Chair.

One of the most difficult problems in the production of a first-class dental chair has been to obtain the great range of vertical adjustment which is desirable to meet the needs of the dentist without incurring one or more objectionable complications, such as the cutting of the floor of the operating-room or the telescoping of the supports.

The Supplemental Lift, when placed upon the Low or Medium-Base Wilkerson Chair, enables us to meet this problem in a more satisfactory manner than anything hitherto offered.

When placed intermediate between the regular plunger elevating device and the body or frame of the chair, it is possible to lift the chair, before the patient steps in, either five or ten inches, after which the treadle elevating apparatus may be used, as before, thus in fact increasing the vertical range of the chair by the amount of the adjustment mentioned, ten inches.

The operation of the apparatus is simple, the weight of the chair body being almost perfectly balanced by springs, so that it may be raised five inches to the first notch; or through the entire range of ten inches, by lifting by the chair arm.

PRICES. The supplemental lift adds twenty-five dollars to the prices of the Disk Base chair as given on the opposited page.

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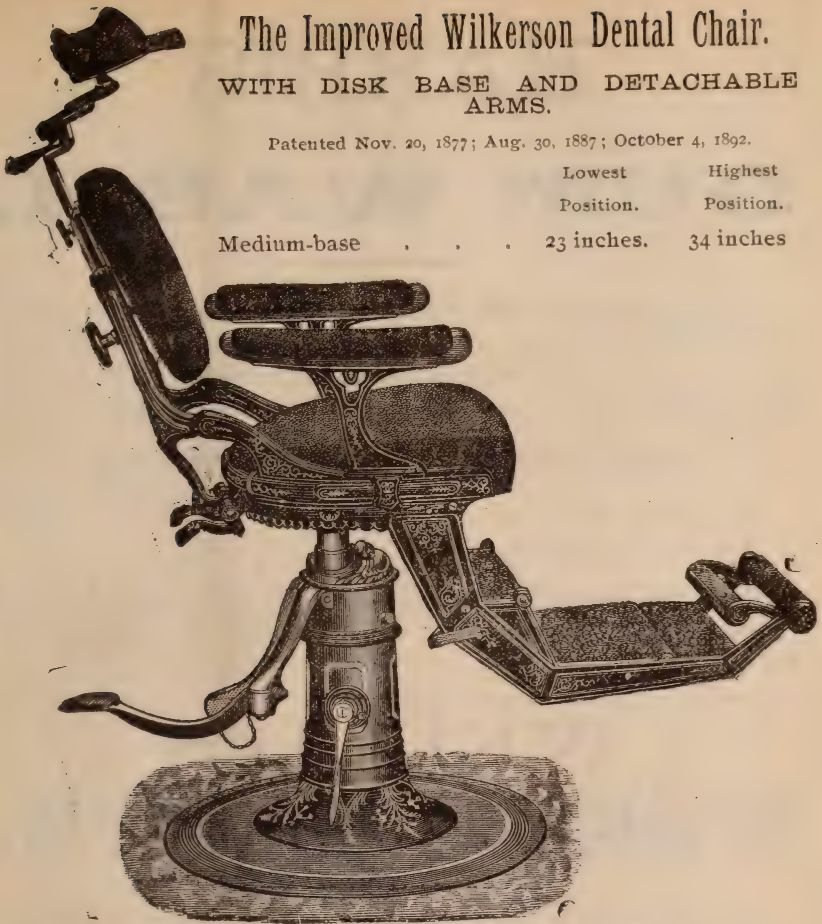
The Improved Wilkerson Dental Chair.

WITH DISK BASE AND DETACHABLE ARMS.

Patented Nov. 20, 1877; Aug. 30, 1887; October 4, 1892.

	Lowest Position.	Highest Position.
Medium-base . . .	23 inches.	34 inches



To accommodate those who prefer the Disk Base we have added to our line of dental Chairs the Wilkerson in this style, as shown in the cut, and we are now ready to furnish the *medium range* Chair on the Disk Base.

The high and low range Chairs with Disk Base are now in process of manufacture and will soon be ready for delivery.

Prices of the Wilkerson Chairs, with either Disk or Leg Base, are the same. *In ordering chairs be particular to state if Disk Base is wanted; if not specified, the regular form will be sent.*

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In Best Quality Green or Maroon Plush	$150.00
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" French Finish Maroon-colored Leather	150.00
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GUM WASH.

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NEATLY PUT UP IN THREE OUNCE BOTTLES.

3 oz. Bottles, each,	$ .25
3 oz. Bottles, per dozen,	2.75

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NERVE PASTE.

This preparation is very certain in its action on the nerve, destroying it in less than twenty-four hours. It has the advantage of not causing pain or producing inflammation, with very rare exception. Also, it may be used with safety in cases of toothache that proceed from exposed nerve, and seldom fails to give relief in from five to twenty minutes.

DIRECTIONS.—Place a portion, of the size of a pin's head, in *immediate contact* with the exposed nerves, covering it carefully with wax, allowing it to remain twenty-four hours. A very minute portion placed in a cavity, in preparation for filling, will destroy its sensibility in four to six hours. The bottle contains sufficient for two hundred applications.

N. B.—If the paste should become dry, moisten it with creosote, or warm it until it is quite soft.

☞If, after twenty-five applications, it does not give satisfaction, return the Nerve Paste and we will return the price.

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Can supply any make or number from any catalogue at manufacturers' prices.

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Octagon, Steel Handles, best quality, per dozen, nickel plated, - $2.00

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From - - - - .90 to $4.00 each

RE-DISTILLED MERCURY.

Put up in four ounce vials, - - - - each .50

MODELLING COMPOSITION.

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Hood & Reynold's 0, 1, 2, 3, per pound,	75

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Caulk's Diamond Pellets, per ounce, Put up in boxes containing 1-4, 1-8 and 1-16 ounces.	$2.00

FOWLER'S TEMPORARY STOPPING.

Price per ounce, - - - - - .50

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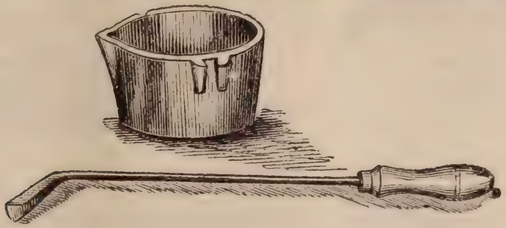

We make three sizes of Ladles; one handle will fit each Ladle, and be removed when the Ladle is placed on the fire.

No. 1, is 5 inches diameter, and 3 inches deep.
" 2, " 4¾ " " " 3 "
" 3, " 4½ " " " 2½ "

PRICE.—2 Ladles, (Nos. 2 and 3,) with 1 Handle	75
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Handles of wrought iron, each	25

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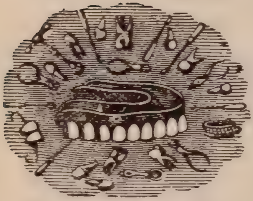
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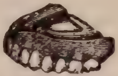
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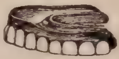
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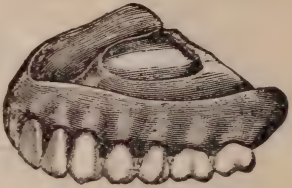
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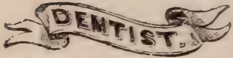

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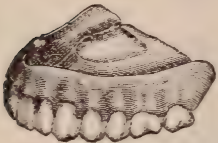
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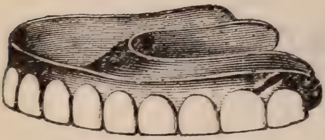
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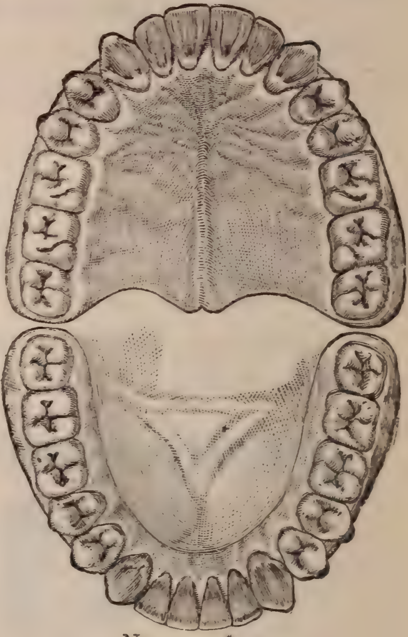
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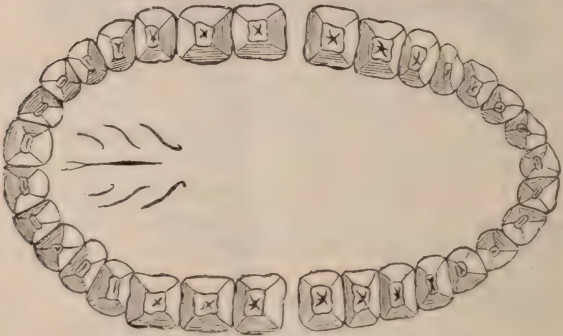
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Formula DR. JOHN P. GRAY.

Increasing demand is the best evidence that physicians and dentists are appreciating the Unique Value of this preparation.

It neutralizes acidity of the stomach, checks fermentation, and is unexcelled as a General and Nerve Tonic.

In Pulmonary and Bronchial affections, Nervous Prostration, Melancholia, Anaemia and Debilitated Conditions it has no superior.

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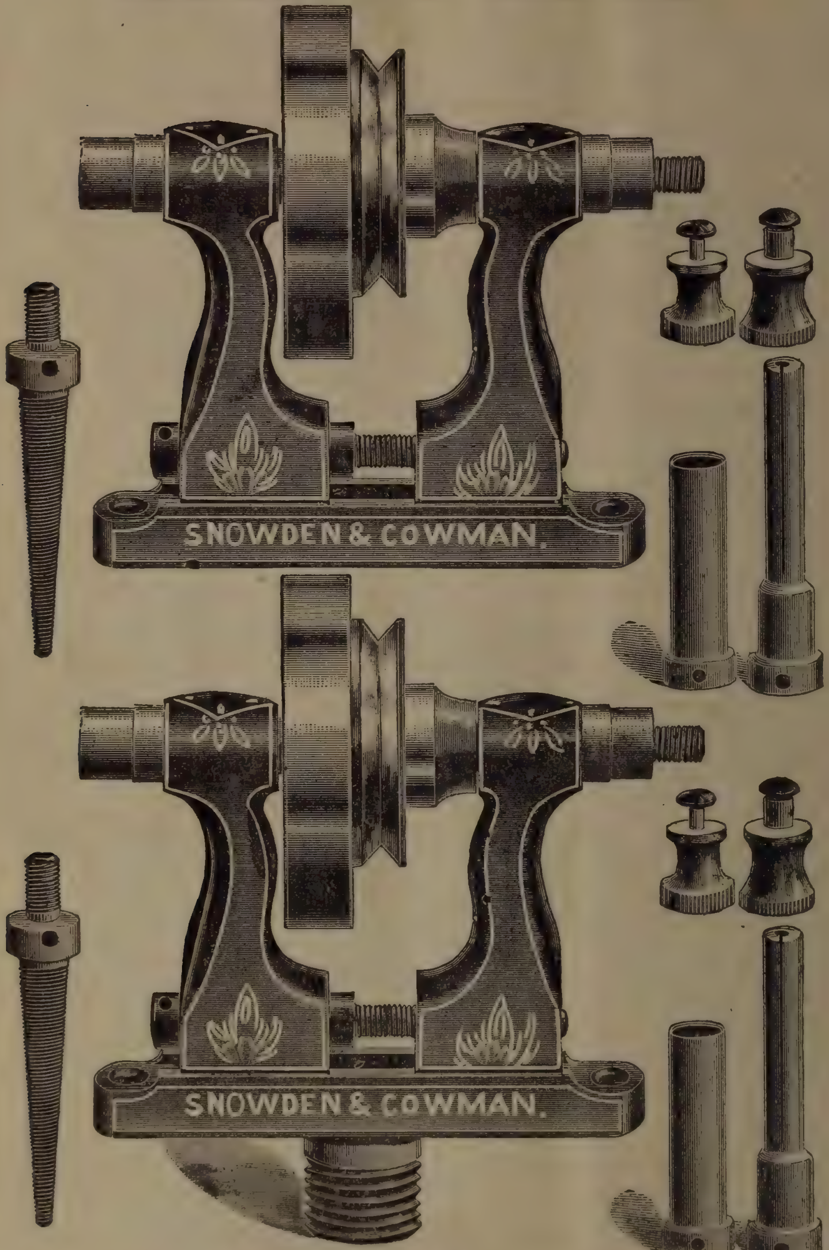
New Improved Cone Lathe Head.

CAN BE USED WITH ANY DRIVING WHEEL.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All lost motion or wear can be taken up by the simple adjusting of screw on base. It is made very strong and durable. It runs easier than any Lathe Head on the market. Fitted to run on either U. S. Lathe Stand or the American Lathe Stand. PRICE, with **5** Chucks, - - **$7.00**

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AUGUST, 1897.

THE AMERICAN JOURNAL OF DENTAL SCIENCE.

EDITED BY

F. J. S. GORGAS, M. D., D. D. S.
RICHARD GRADY, M. D., D. D. S.

Vol. 31. THIRD SERIES No. 4.

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LONDON:
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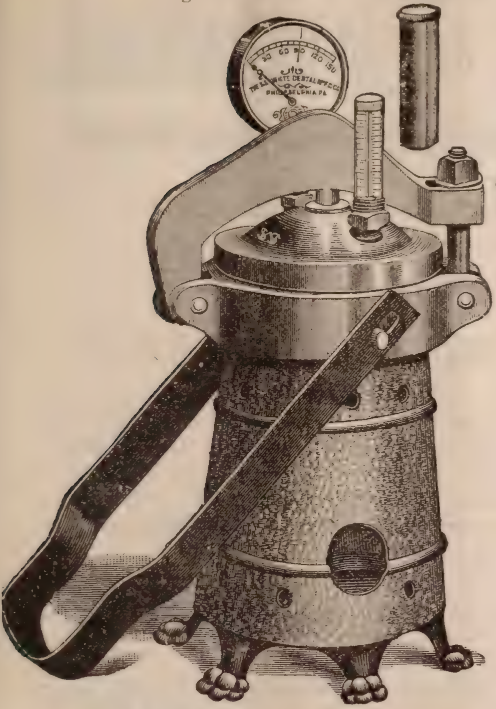
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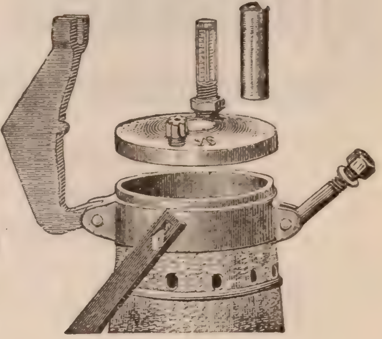

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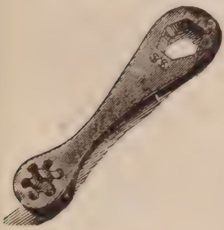

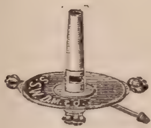

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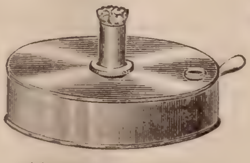

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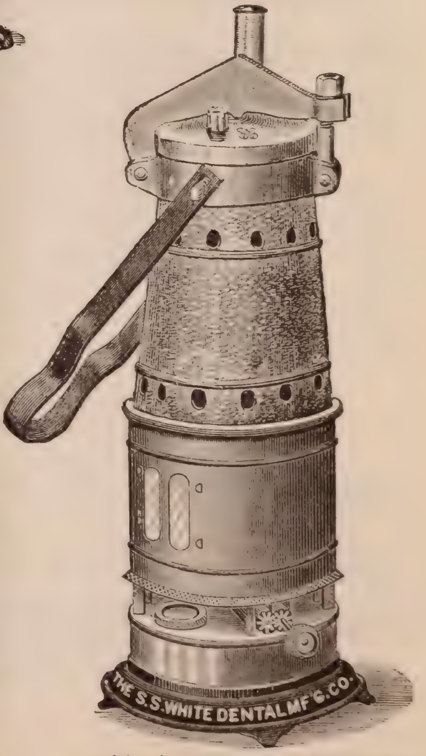
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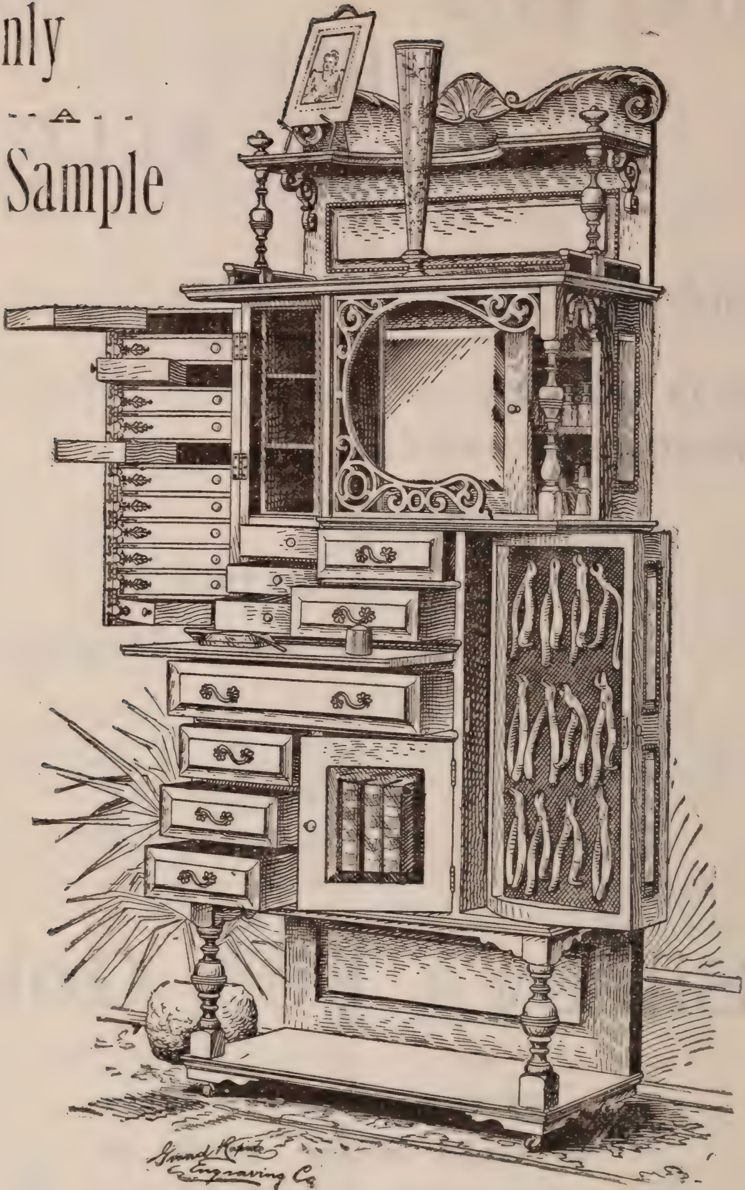

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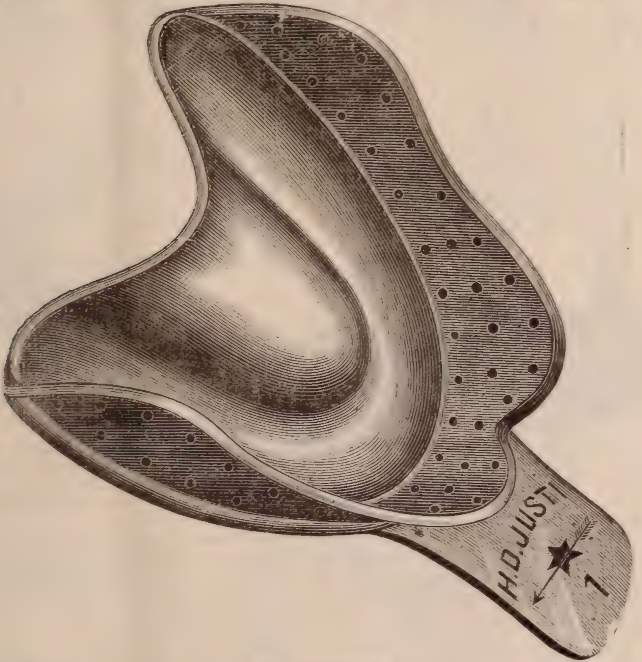
New Flexible

RIM IMPRESSION TRAYS.



[PATENTED.]

WHILE plaster impressions are acknowledged to be the only reliable ones, every dentist has found a serious difficulty in obtaining them, owing to the tendency of the plaster on the outside the maxillary ridge to break away when the impression is withdrawn from the mouth. This usually breaks into small pieces, always difficult and often impossible to replace. From this cause sometimes several impressions have to be taken before one sufficiently perfect for use can be obtained.

In the New Tray this trouble is removed. The plaster is mixed and applied in the usual way; when withdrawn it will break away, but the pieces, adhering to the rubber, will come directly back into their proper places, and the impression can at once be brought into perfect shape. This result is obtained by making the rim of the Tray of rubber, as shown in the cut. This rubber is fastened in a groove in the base of the Tray, and is sufficiently rigid to support the plaster while taking the impression, and yet flexible enough to permit the impression to be withdrawn without difficulty.

These upper Trays are five sizes, No. 1, the largest, being the same as the common No. 1 Tray; the others are evenly graded to No. 5, which is small enough for any case likely to be presented.

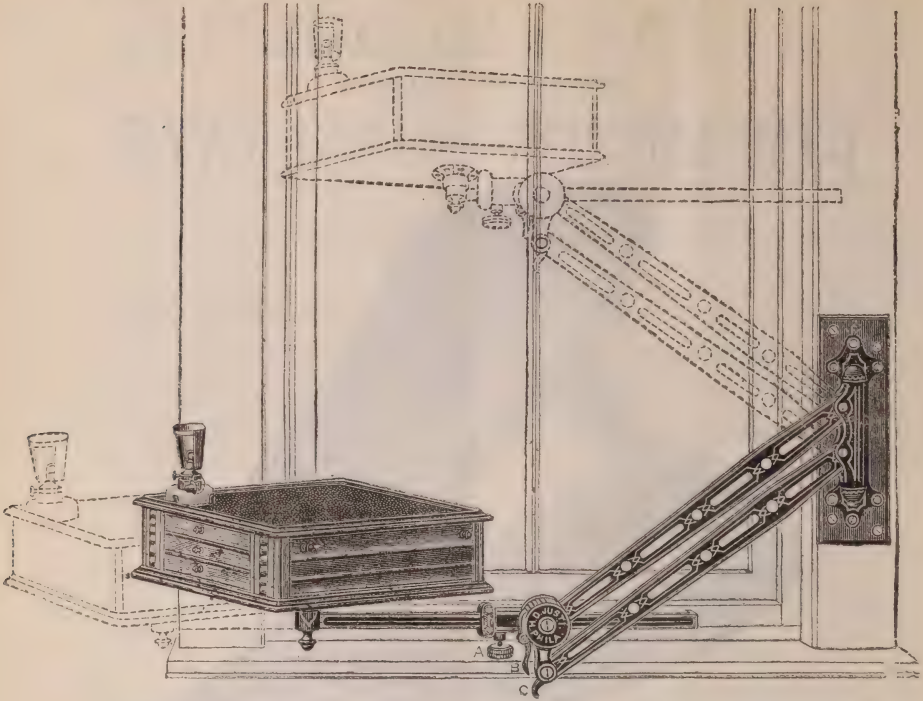
This invention has been tried by a number of dentists, and pronounced a great success, saving them much annoyance and trouble, and giving them far more perfect results.

PRICE . . . . each, $0.75

H. D. JUSTI & SON,

PHILADELPHIA: ***CHICAGO:***
and 1303 Arch St. **66 Madison St**

The HANDY BRACKET.



The success which this Bracket has achieved and the universal popularity and demand for it, has far exceeded our highest expectations; having made a number of improvements since its original introduction, we considered it essential to give a new illustration of it as it is now made, accompanied by the Grigg Table.

The Bracket being so well known and fully described before we deem it unnecessary to repeat, but wish only to add, that when we stated this Bracket to be one of the most convenient ever placed on the market, we were not wrong in our assertion, as its great sale has since demonstrated.

PRICES

Handy Bracket with Table No. 1,	$12,00
" " " " No. 2, Lamp and Shield,	14.00
" " " Grigg Table, " " "	24.00
" " " Allen " Plain Sides, Lamp and Shield,	18.00
" " " " " Glass " " " "	21.00
Small Table No. 1, covered with Cloth or Leather,	3.00
" " No. 2. " " " " Lamp and Shield,	5.00
Allen " Plain Sides " " " " " " "	9.00
" " Glass " " " " " " " "	12.0
Grigg " covered with Cloth or Leather, Lamp and Shield,	15.0

H. D. JUSTI & SON,

PHILADELPHIA, - - CHICAGO,

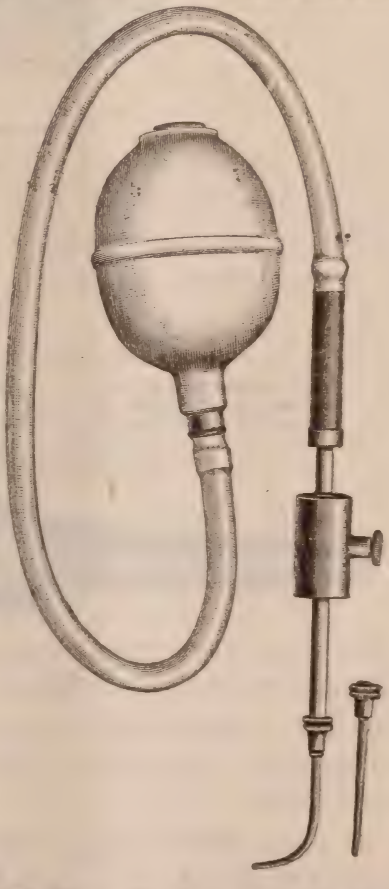
1301 and 1303 Arch St. 66 Madison St.

DIRECTIONS FOR USE OF

BLAIR'S VAPORIZER

FOR THE TREATMENT OF PULPLESS TEETH.

1. If possible, always adjust rubber dam, or usual method of keeping
oth dry. Never use a broach or drill in canal until treated with vaporizer.
2. Clean out pulp chamber and expose openings of nerve canals ; then
troduce one of the points in opening of canal, and force the gas generated
the vaporizer into the canal until the root is saturated with the gas.
ean out canals thoroughly when
ssible, then treat again and fill
mediately, if there is no indica-
n of pus coming through the
d of roots.
3. If there is a blind abscess in
e tooth, stop up lightly with
tton and have patient return on
ird day. Three treatments will
nerally cure any case of blind
scess.
4. If there is a fistulous opening,
and force gas through same.
e application is often all the
e will require.
Open screw top on vaporizer and
ace small quantity of the iodo-
m (which accompanies each in-
ument) in chamber ; then heat
fficiently, not too hot, to cause
thin stream of vapor to issue,
pressure of bulb, from point
vaporizer needle. Then insert
canal and force gas into same.
This gas will penetrate to every
int in the canal and will abso-
ely destroy every vestige of ani-
l life.



PRICE, EACH, $3.50.

MORRISON BROS., Sole Agents,

NASHVILLE TENN.

Hawe's Moulding Flasks.

Fig. 1.

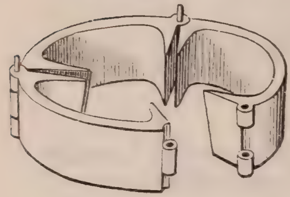


Fig. 2.

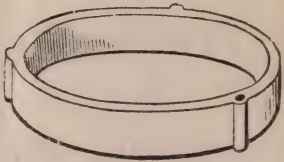


Fig. 3.

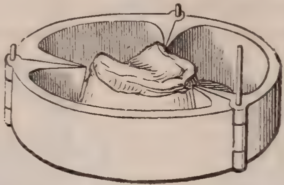
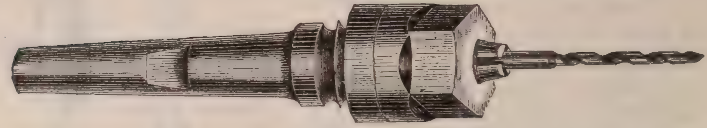


Fig. 1 represents the lower section of the Flask, slightly opened, to show the Joints. Fig. 2 is the upper section. When ready for use, the lower section is closed and confined by a Pin, and the Plaster Model placed in it, as represented in Fig, 3.

Price - - - - - $3.00

STEEL CHUCK.

PATENTED.



The above cut represents a very complete SELF-CENTRING, THREE-JAWED STEEL CHUCK, carefully made, durable and convenient. The wearing parts are hardened ; the jaws have a good bearing on the drill, and hold securely either a straight or tapered shank.

It carries Drills, Burs, or Corundum Points of the DENTAL ENGINE, one-eighth of an inch in diameter, and under, and made to fit our AMATEUR, UNITED STATES SHORT SPINDLE AMERICAN SHORT SPINDLE, and HAND and FOOT LATHES.

Price, with Wrench, - - - $2.00.

REDUCED PRICES

— OF —

Dental Machinery of Our Own Design.

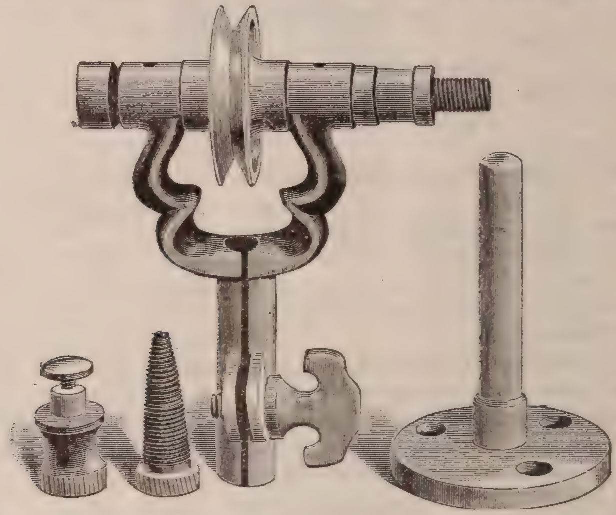
Amateur Lathe—Complete,	$25 00
“ “ Head, &c. all above stand,	13 00
“ “ Stand and Cord,	13 00
United States Lathe—Long Spindle,	15 00
“ “ “ Short Spindle,	15 00
“ “ “ Stand and Cord,	11 00
American Lathe,	14 00
“ “ Extra Large Driving-Wheel,	15 00
Diamond Lathe—Complete,	13 00
“ “ Fly Wheel,	7 00
Fly-Wheel No. 1,	7 00
Portable Hand or Foot Lathe—Complete,	5 50
“ “ “ “ Without Foot Attachment,	5 00
Quadrant Hand Fly-Wheel Lathe,	4 50
Hand Fly-Wheel Lathe,	4 50
Hand Lathe,	4 00
Diamomd Lathe Head—Polished Brass,	6 00
Socket Table Head,	4 50
U. S. Table Head—Holes in base to screw to table,	4 00
Engine Lathe Head—Nickel Plated,	4 00
American Lathe Head—Holes in base to screw to table,	4 00
Ladles and Handle—Two Ladles and one Handle,	75
Extension Brackets—Weight only five pounds,	6 00
Patent Portable Head-Rest—Nickel Plated,	10 00
Portable Head-Rest—Weight only four pounds, Bright Parts Nickel Plated,	4 50
Soldering Lamps,	90
Flask Presses—Well made and very strong—No. 1 Old Style,	1 50
“ “ “ “ “ “ “ No. 2 New Style,	1 50
Ingot Moulds—Broad base with handles, No. 1,	2 25
“ “ “ “ “ “ No. 2,	2 75
“ “ “ “ “ “ No. 3,	3 25
Bailey's Moulding Flasks—Per set of 2,	75
Steel Chuck,—to fit our Amateur United States, American, Short Spindle and Hand and Foot Lathe,	2 00
Welch's Nerve Paste,	1 00
Britannia Impression Cups—long handles, various styles and 29 sizes—each,	25

☞ **We make no charge for Boxing any of the above goods.**

SNOWDEN & COWMAN MFG. CO.

9 West Fayette Street, Baltimore, Md.

ENGINE LATHE HEAD FOR BRIDGE AND CROWN WORKERS.



THIS LATHE HEAD CAN BE ATTACHED TO SHAW ENGINE BY SLIPPING SOCKET OVER STANDARD AND TIGHTENING THUMB SCREW. IT IS VERY LIGHT AND NEATLY NICKEL PLATED. IT RUNS VERY SMOOTHLY AND LIGHTLY. IT ALSO CAN BE MOUNTED ON TABLE AS SHOWN IN CUT BY THE SMALL ATTACHMENT. . . . .

PRICE COMPLETE - - $4.00.

VULCANIZERS

Our Own Manufacture.

WE ARE MAKING 3 STYLES.

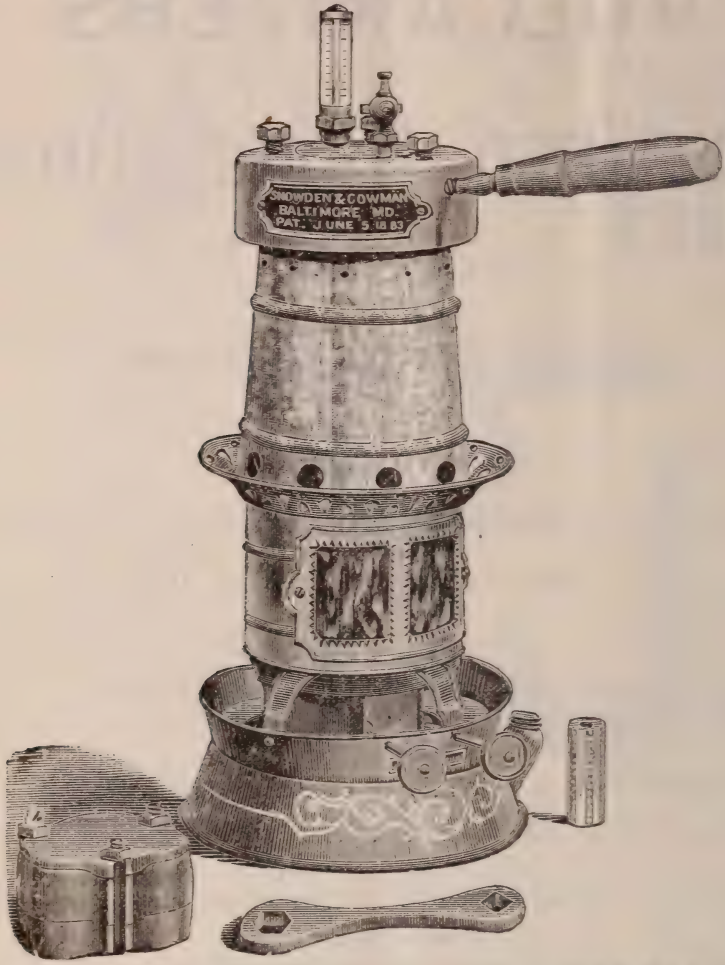
Complete with Coolidge's Gas and Time Regulator, . . .	$25 00
Complete with Gage and Blow-off Cock for Gas or Kerosene, ...	21 00
Complete with Thermometer and Blow-off Cock for Kerosene or Gas, ...	18 00
Vulcanizers complete with Two Brass Flasks, instead of Iron Flasks, adds	1 50
Vulcanizers complete without Two Iron Flasks, deduct	1 50
Vulcanizers complete, less Kerosene Stove, deduct . .	1 70
Vulcanizers complete, less Gas Stove, deduct	1 00
Large Iron Flasks, each	1 00
Large Brass Flasks, each	1 50

SNOWDEN & COWMAN MFG. CO.

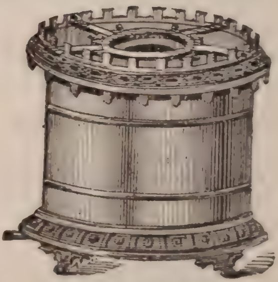
9 W. Fayette Street, Baltimore, Md.

SNOWDEN & COWMAN MFG. CO.'S

New Patent Vulcanizer.



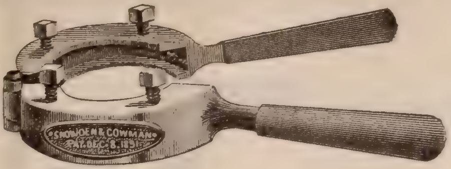
Complete for Kerosene or Gas, with Two Large Malleable Iron Flasks, ***$18.00***

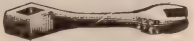


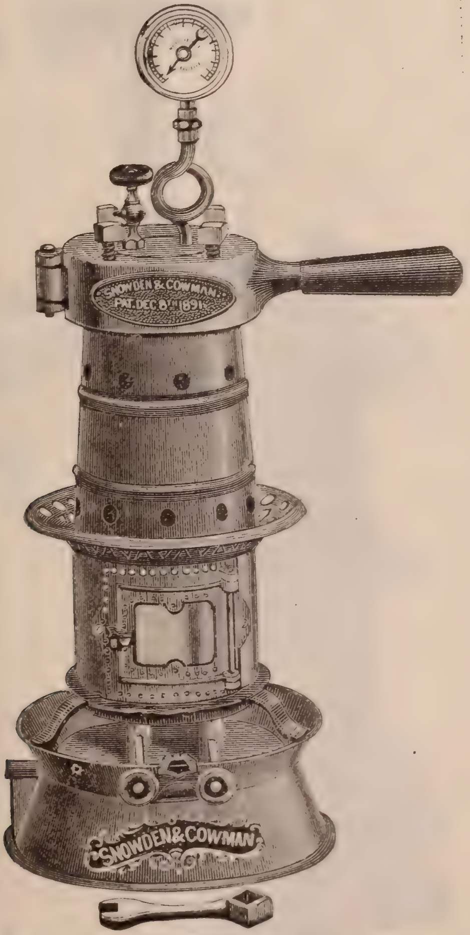
Gas Stove.

PATENTED DEC. 8, 1891.

Snowden & Cowman Mfg. Co.'s Hinged Clamp Vulcanizer.





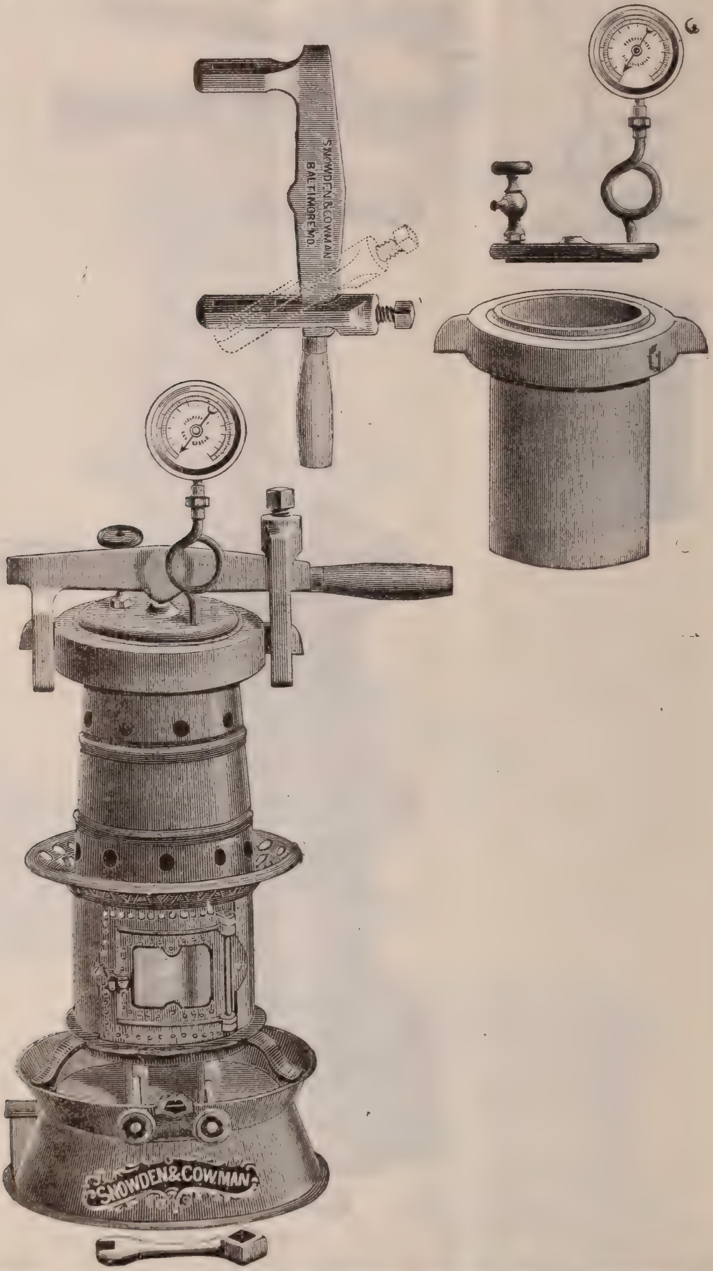


Price complete with 2 Flasks Improved for Gas or Kerosene with Guage as represented, ... *$21.00*

With Thermometer and without Guage, ... *18.00*

CIRCULARS ON APPLICATION.

Snowden & Cowman Mfg. Co.'s Improved Cross-Bar Vulcanizer



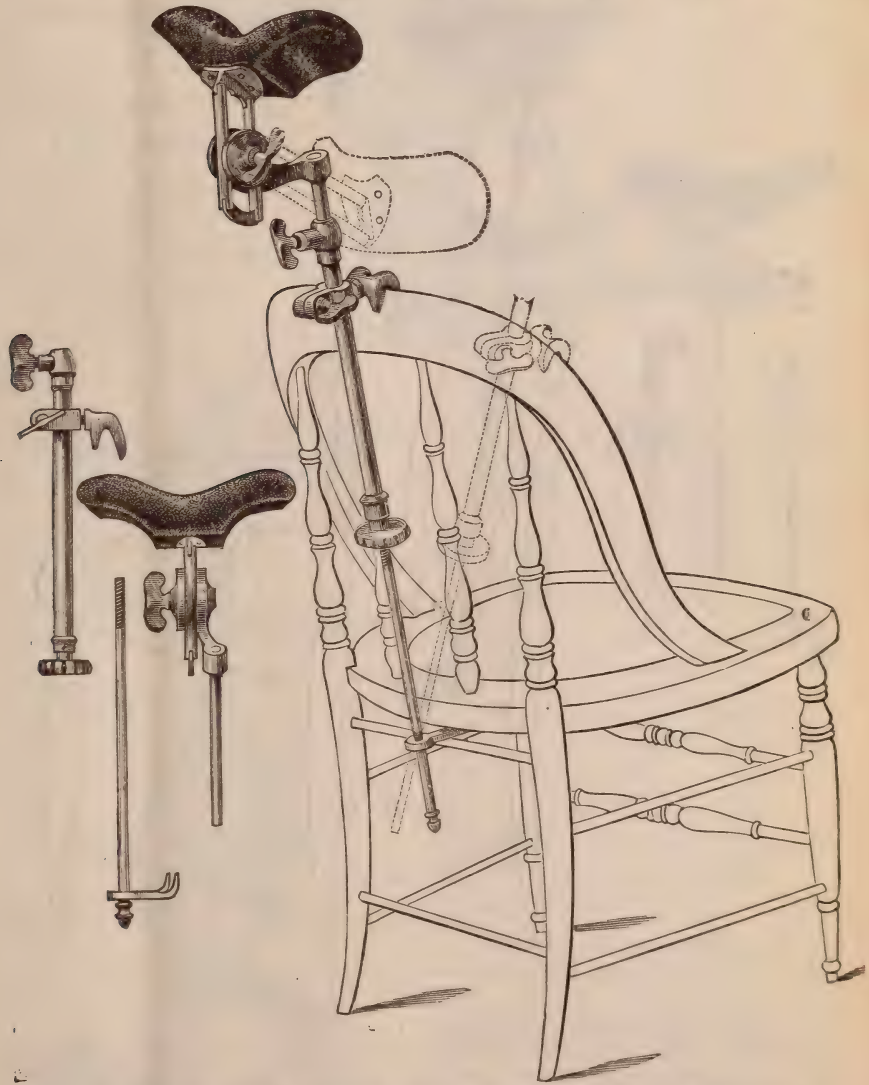
Price complete with two Flasks for Gas or Kerosene, with Guage as represented,	$21.00
With Thermometer and without Guage,	18.00.

CIRCULARS ON APPLICATION.

Snowden & Cowman Mfg. Co.'s

—NEW—

Portable Head-Rest.



PRICE, Full Nickel Plated, - - *$10.00*

—MANUFACTURED AND FOR SALE BY—

SNOWDEN & COWMAN MFG. CO.

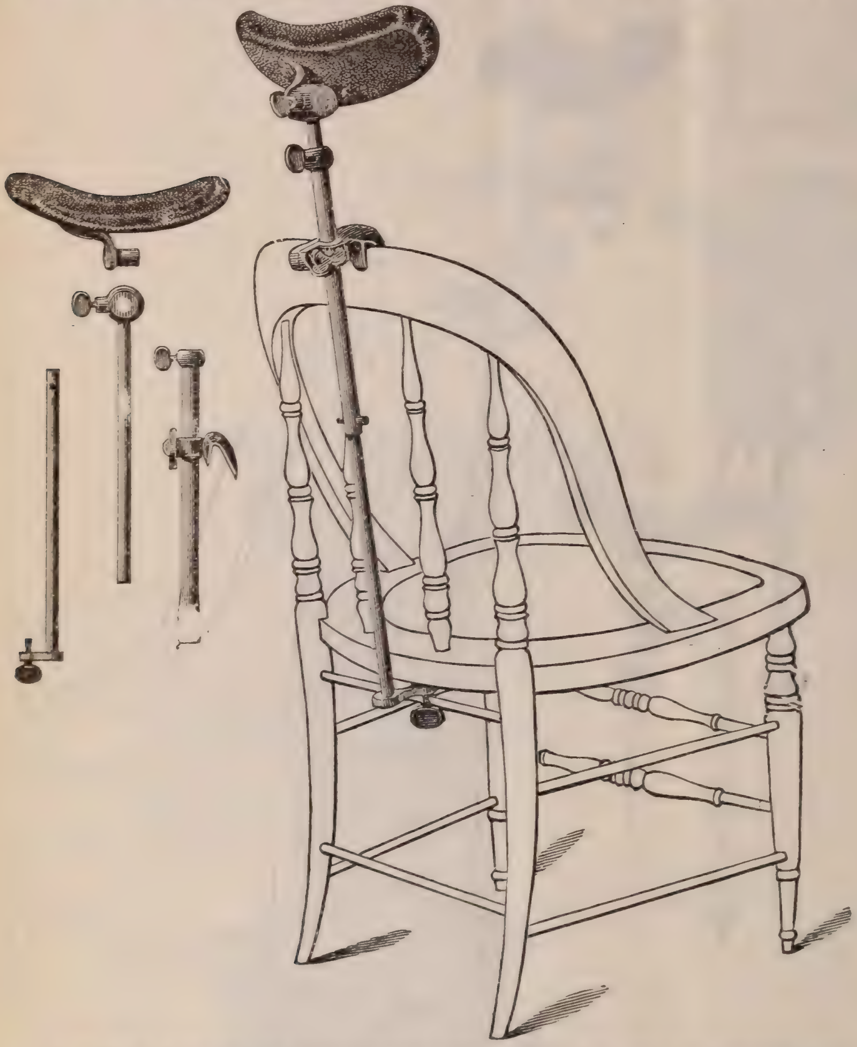
9 West Fayette Street Baltimore Md.

Price Reduced

SNOWDEN & COWMAN MFG. CO.'S

IMPROVED

Portable Head-Rest.

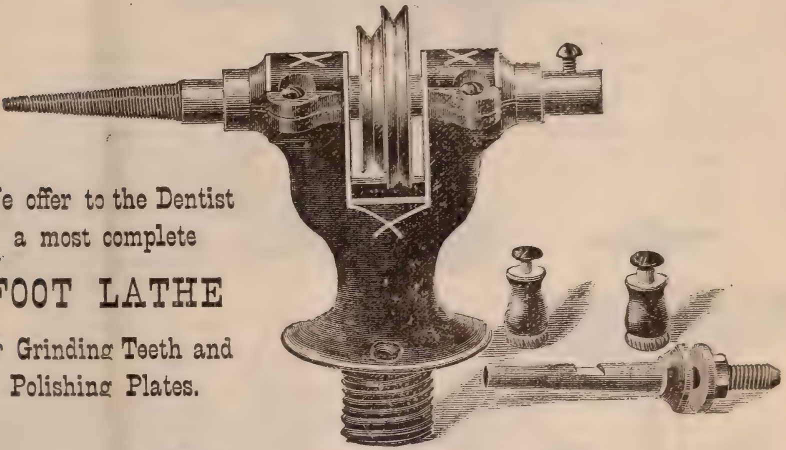


This Head-Rest can be attached to any chair, is very firm, and can be raised, lowered or moved backward or forward without interfering with attachment to the chair. Handsomely painted and bright parts nickel-plated.

It weighs only 4 lbs., and occupies a space only of 13 x 4 inches. PRICE, $4 50.

Price Reduced.

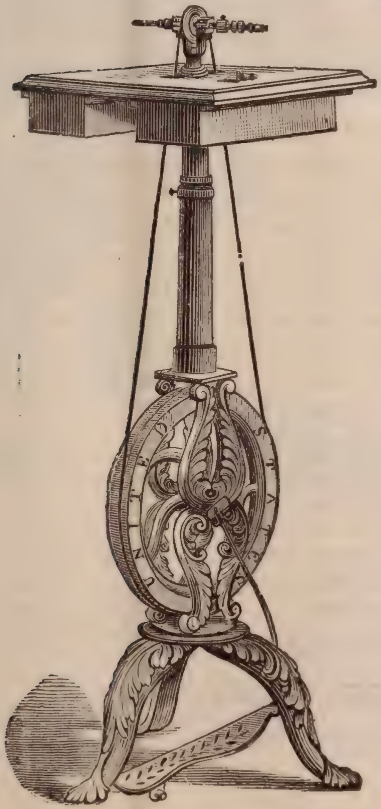
UNITED STATES LATHE.



We offer to the Dentist
a most complete

FOOT LATHE

for Grinding Teeth and
Polishing Plates.



It has been gotten up in a superior manner, great care having taken to make it durable and efficient. It has a movable column and table, which is capable of being elevated eight inches, to accommodate the operator in either a sitting or standing posture.

It can be packed in a box sixteen inches square, and can be set up in a few minutes, presenting a very neat and pleasing appearance, suitable for the office or laboratory. It is finished in bronze, and runs very light and steady.

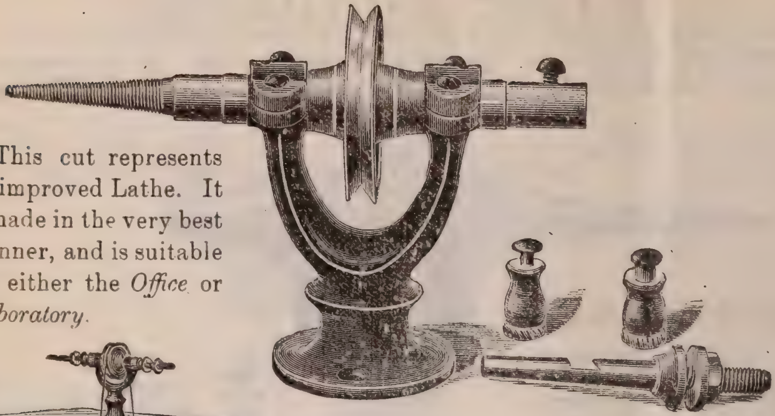
Price of Lathe complete with Short Spindle, as per cut,	$15.00
Price of Lathe complete with Long Spindle,	15.00
Price of Stand only, including Cord and and Coupling,	11.00

Snowden & Cowman Mfg. Co.,

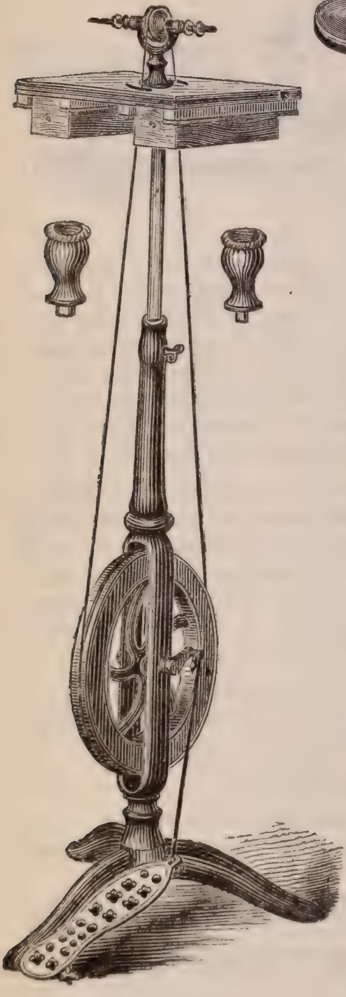
9 W. Fayette Street,

BALTIMORE, MD

AMERICAN LATHE, PRICE REDUCED.



This cut represents an improved Lathe. It is made in the very best manner, and is suitable for either the *Office* or *Laboratory*.



It has a solid spindle, one end of which is a taper screw for brush or felt wheels, and also, a space for a large corundum wheel. The other side of the spindle has a space for a large corundum wheel and a screw to receive the chucks, on which very small corundum wheels can be placed

It has a movable column and table, which is capable of being elevated ELEVEN inches, to accommodate the operator in either a sitting or standing posture.

Either end of the spindle can be thrown towards the operator, if more convenient, by the set screw at the top of the column.

We also make for this Lathe a Socket Spindle—similar to our U. S. Lathe Short Spindle.

Price of Lathe, as per cut, with two Chucks,	$14.00
Price of Lathe, with Socket Spindle, with two Chucks,	14.00
Price of Lathe, with Extra Large Driving Wheel,	15.00
Chucks, extra,	.15

☞ No charge for Boxing.

SNOWDEN & COWMAN MFG. CO.,

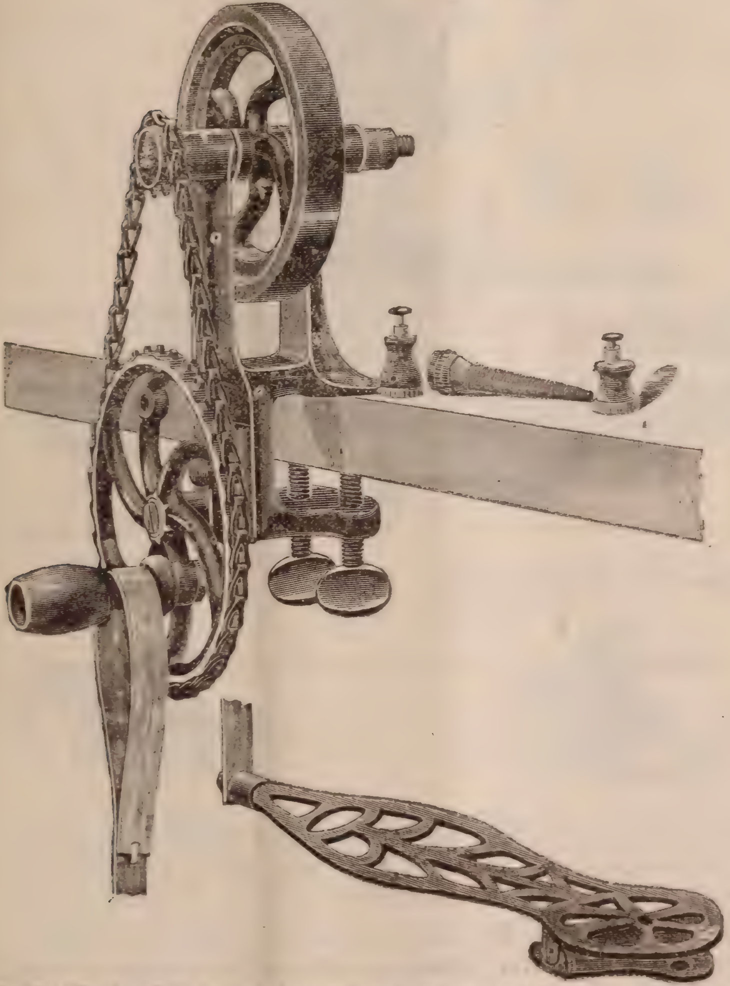
9 W. Fayette Street, Baltimore

SOMETHING NEW FOR TRAVELLING DENTISTS.

LINK CHAIN LATHE,

TO BE USED EITHER BY HAND OR FOOT POWER.

PRICE, - $7.00.



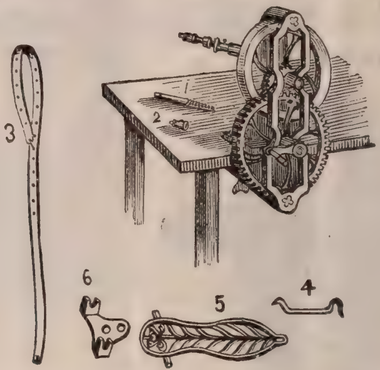
The Fly Wheel with Spindle is driven with an Endless Chain and makes very little oise, as it is propelled by large and small Sprocket Wheels, this gives it a very steady novement and does not require as much power as a geared lathe. It is fastened to table r bench by two Thumb Screws which make it impossible to turn when both are screwed p. It is very light and can be carried in a small satchell.

Snowden & Cowman Mfg. Co.,

9 W. Fayette Street, BALTIMORE, MD.

PRICE REDUCED.

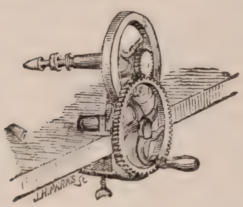
Portable Hand or Foot Lathe.



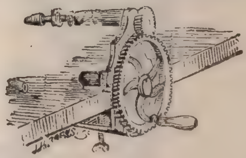
The above is a cut of a PORTABLE HAND OR FOOT LATHE, which is very efficient, manufactured for the traveling dentist; weighs under 7 pounds, and occupies the space of 6 by 9 inches. Members of the profession who have seen it pronounce it first rate.

Price, complete, - - - - - -	$5 50
Without Foot Attachment, - - -	5 00

Hand Fly Wheel Lathe.



Hand Lathe.



HAND FLY WHEEL LATHE.—It is intermediate between the Hand Lathe, and the Hand and Foot Lathe; it weighs only three pounds and is a first rate Lathe. - - PRICE, $4 50

HAND LATHE.--It is small, strong and durable, and weighs only two and a quarter pounds; we have sold a large number of these Lathes,—giving great satisfaction. - • PRICE $4 00

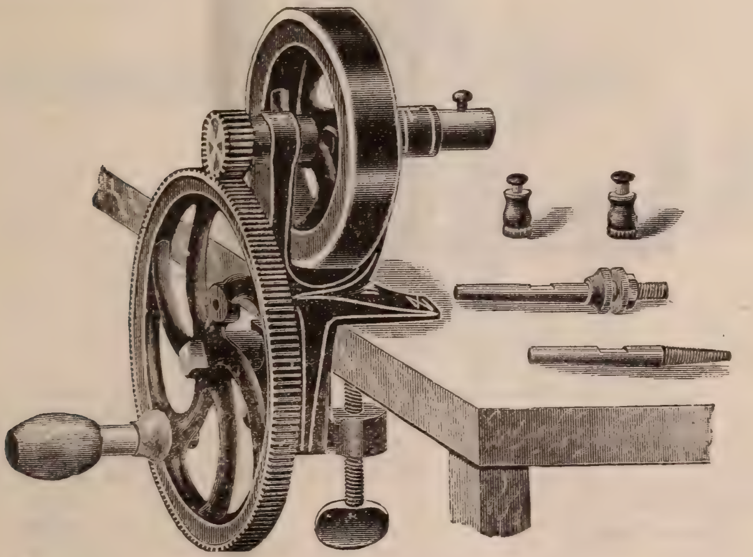
☞ All of the cog wheels of our Lathes are turned and cut on a machine, and are uniform, which makes them run true and with little noise.

SNOWDEN & COWMAN MF'G CO.,

No. 9 West Fayette St., Baltimore.

NEW HAND FLY WHEEL LATHE.

This Lathe is made larger and heavier and can be used with foot. It runs very steady and makes a good lathe for either Office Laboratory or to carry around. It is very neat.



PRICE, - - - -	$5 00
" with Foot Attachment and Strap,	5 50.

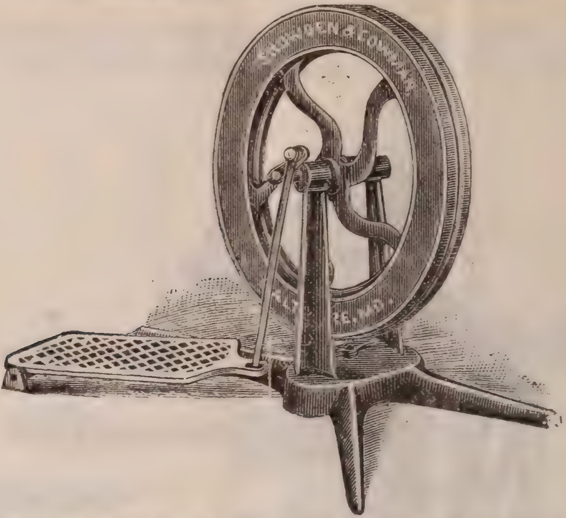
'The proof of the pudding is in the eating."

If the experience of dentists generally did not prove OUR GOLD AND PLATINA ALLOY a superior filling they would not be willing to pay nearly double more for it than the price of common amalgams. I suppose there is not another alloy or amalgam so generally used by our better class of dentists.

Welch's Alloy, 1 oz. $3.00; 2 oz. $5.50, 4 oz. $10.00; 10 oz. $22.00.
Welch's Amalgam, 1 oz. $2.00; 2 oz. $3.50; 4 oz. $7.00; 10 oz. $15.00.
Welch's Oxiphosphate, large $1.50; medium $1.00.
Liquids or powders, large 75 cts.; medium 50 cts.

T. B. WELCH, - - - - Vineland, N. J.

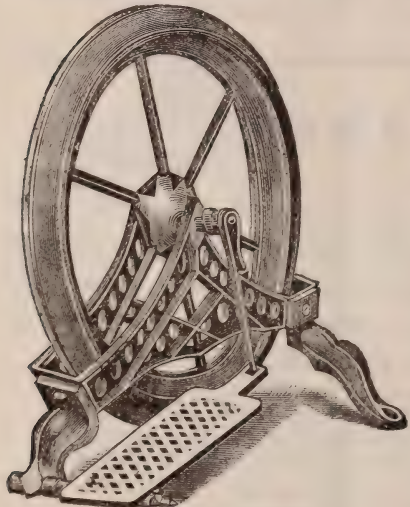
FLY WHEEL, No. 1, NEW.—Price Reduced.



This Fly Wheel weighs 30 lbs., with diameter of wheel 15 inches. The stand is the stiffest and steadiest of any driving wheel in the market. Owing to the position of the feet and the peculiar arrangement of the treadle, the wheel has an immense power and is very light running. In boxing remove pin that connects treadle with rod and fold treadle by side of the wheel. Weight complete, 46 lbs.

Price Boxed, - - - - - - **$7.00**

DIAMOND FLY WHEEL.—Price Reduced.



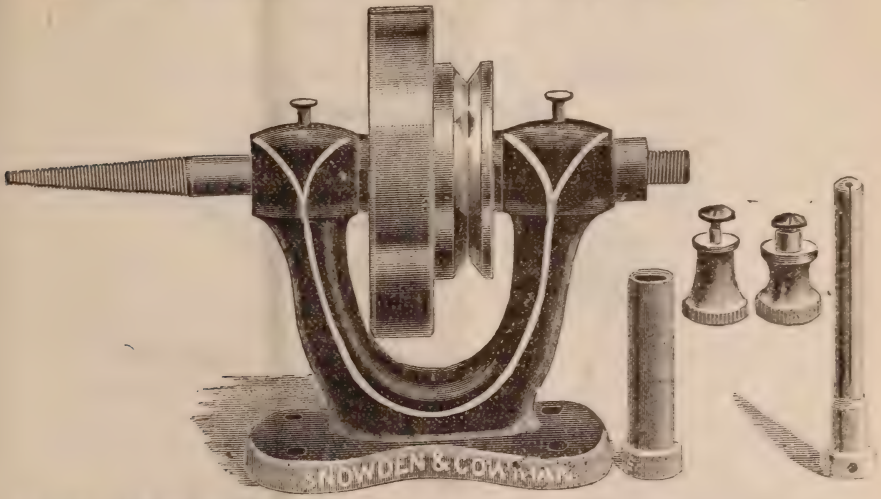
This fly-wheel is eighteen inches in diameter, with wrought iron spokes, in an iron frame, complete in itself, can be set any where, and runs very steady.

It has sufficient power and speed for any Dentist's Lathe Head. The feet are easily detatched, and all can be packed in a smaller box than any other Fly Wheel of its dimensions in the market.

Price Boxed, - - **$7.00.**

SNOWDEN & COWMAN MFG. CO.,
No. 9 W. Fayette Street,
Baltimore.

OUR NEW LATHE HEAD.

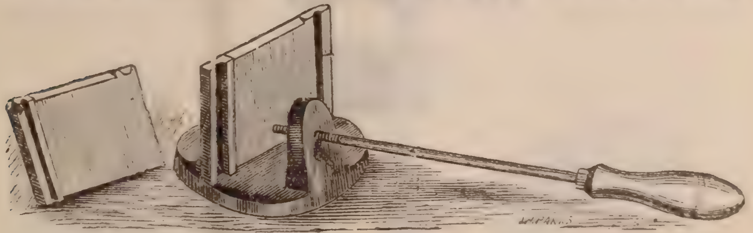


VERY SIMPLE AND EASY RUNNING.
ADJUSTMENT QUICKLY MADE.
VERY DURABLE AND STEADY.

PRICE WITH 4 CHUCKS, - - -	$5.00.

SNOWDEN & COWMAN MFG. CO.'S

INGOT MOULDS.



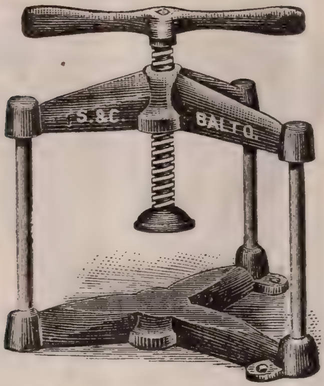
No. 1, will cast a plate from one half of an inch to two inches in width, also a round, half-round and square bar. -	$2.25
No. 2, will cast a plate from one half of an inch to two and three quarter inches in width, also a round, half-round and square bar. - - - - - -	$2.75
No. 3, will cast a plate 3 inches wide and 4 inches long also round, half-round and square bar, -	$3.25

LIBERAL DISCOUNT TO THE TRADE.

Snowden & Cowman Mfg. Co's

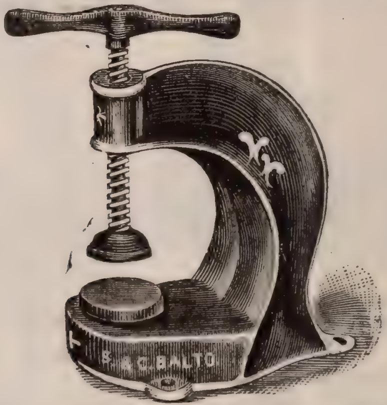
Flask Presses.

No. 1, Old Style Improved.



This Press is intended to close the flask after packing with rubber. It is of great advantage, saving screws and flasks. The upright rods are of wrought iron and the handle of the screw can be detached. They are *well made* and *very strong*, and has been made larger, so that it will take any Flask in the market. Price, - - - - $1.50.

No· 2, New Stvle.

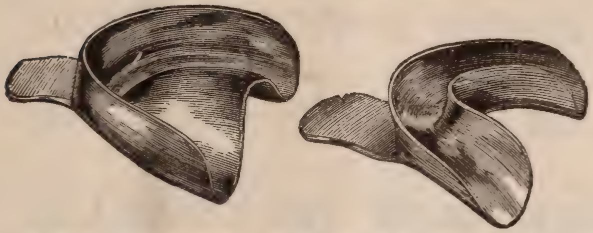


This Press is made of cast iron, very heavy, with steel screw and detachable handle. It has a Pivot Plate to level up the flask, insuring always a central pressure on the flask ; will take any flask in the market. Price - - $1.50

BRITANNIA IMPRESSION CUPS

LONG HANDLES.

We Manufacture the following Sizes and Varieties:



UPPER, Nos. 00, 0, 1, 2, 3, 4, 5, 6, 7.—(No. 00 is the largest size.)
LOWER, " 1, 2, 3, 4, 5. —(No 1 is the largest size.)

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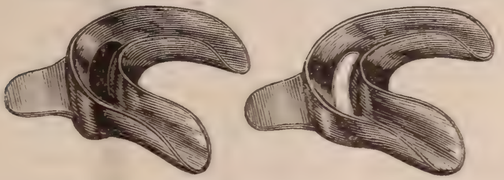

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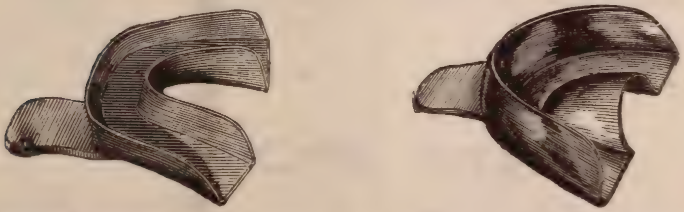

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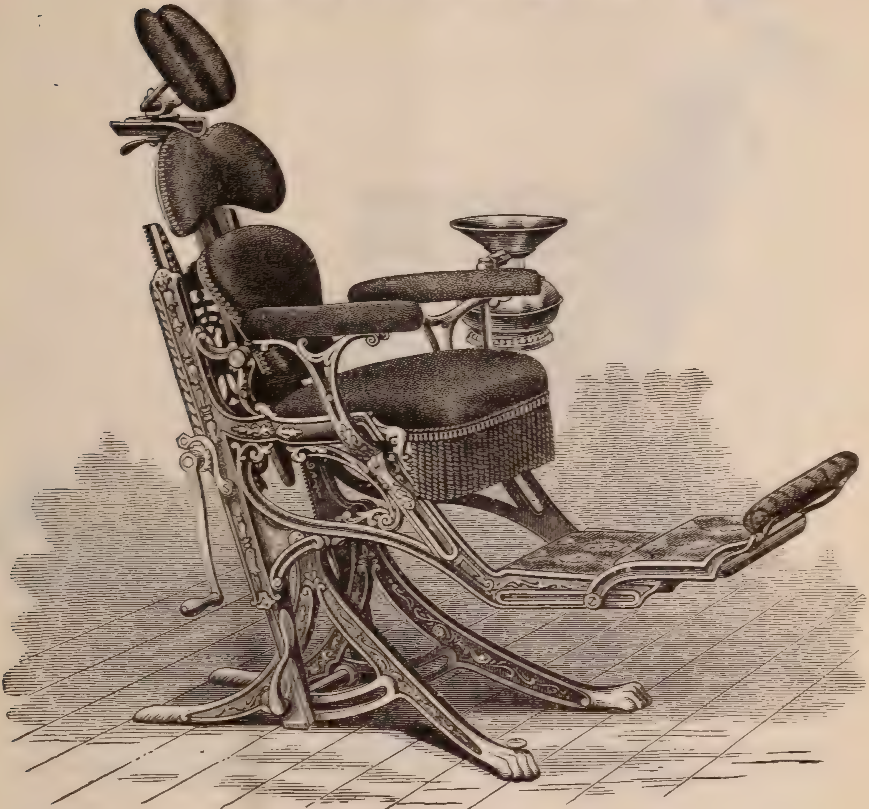

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We supply either style of the Morrison Chair, with or without Casters When ordered with Casters, the price is $10.00 extra.

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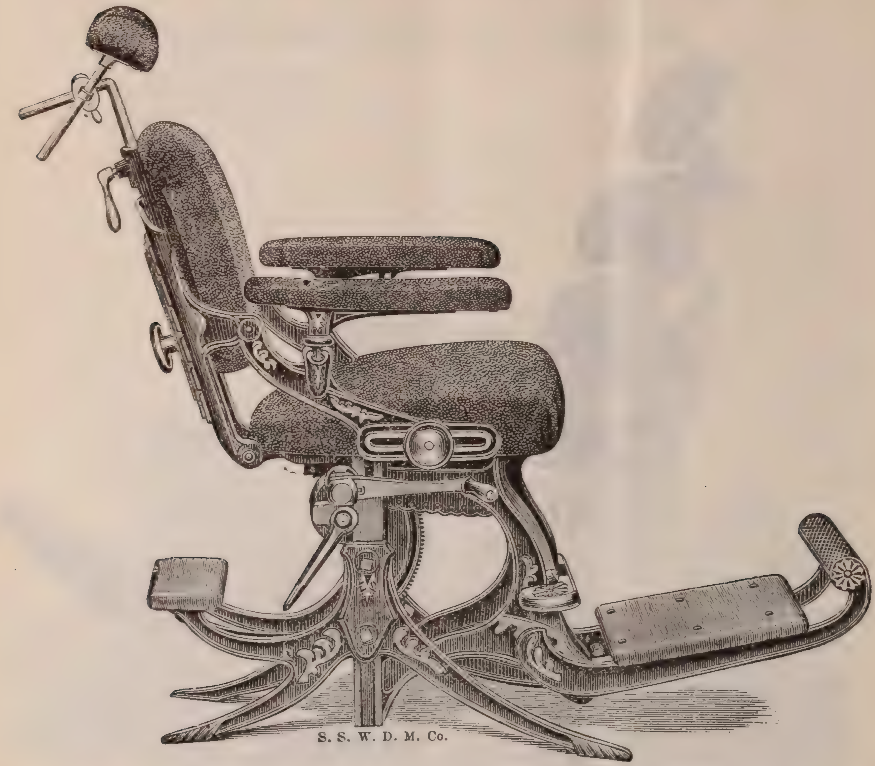

Patented December 28, 1875; July 3, 1877; November 20, 1877; March 9, 1880; May 22 1883. Re-issues July 4, 1876; March 19, 1878; August 27, 1878. Others pending.

This Chair was designed especially to meet a demand for a chair which, while affording a variety of essential movements, could be sold at a lower price than the Wilkerson, The S. S. White Pedal-lever, or the Morrison.

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" " Best Quality Maroon or Green Plush,		85.00

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With Supplemental Lift and Disk Base.

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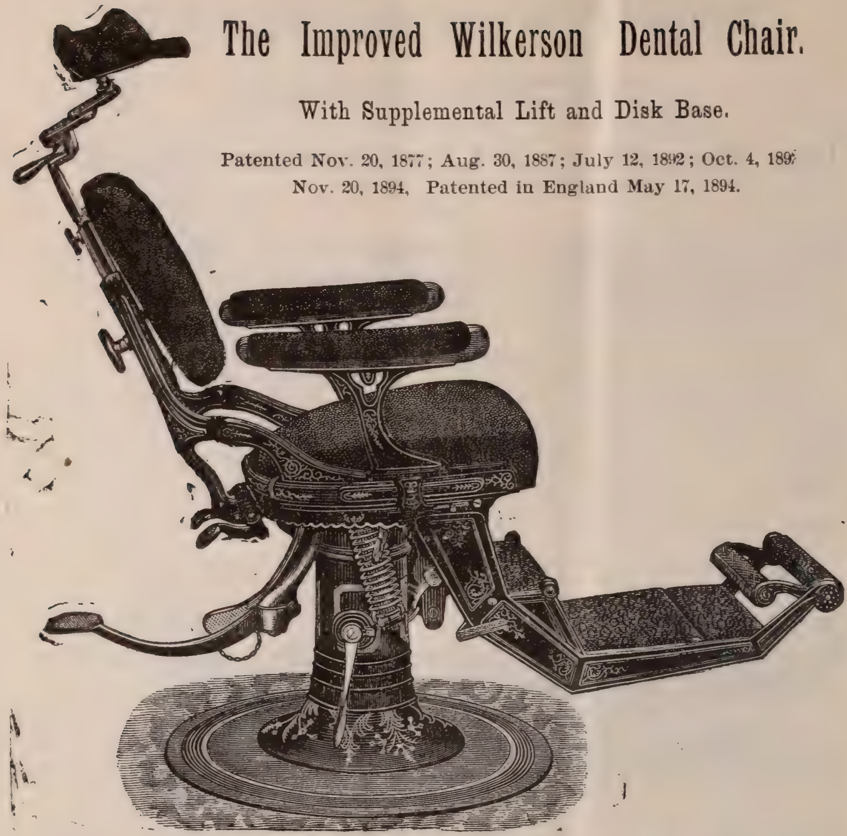
Nov. 20, 1894, Patented in England May 17, 1894.



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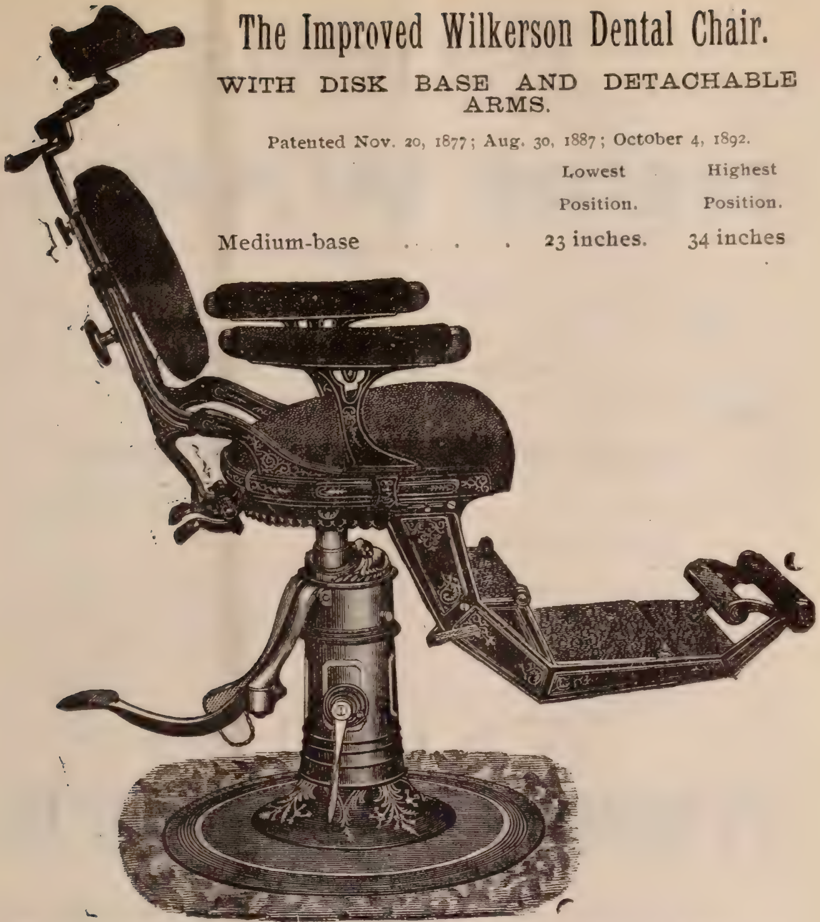
	Lowest Position.	Highest Position.
Medium-base	23 inches.	34 inches



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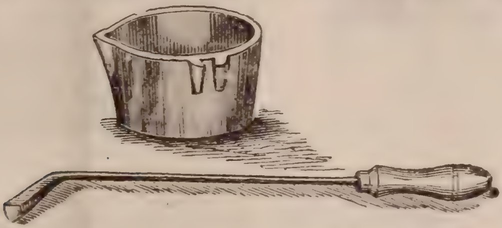

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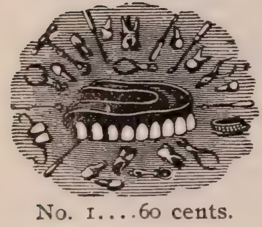

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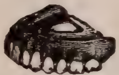

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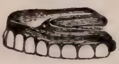

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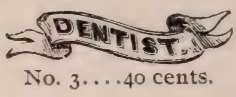

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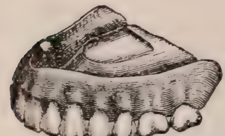

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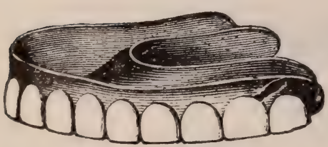

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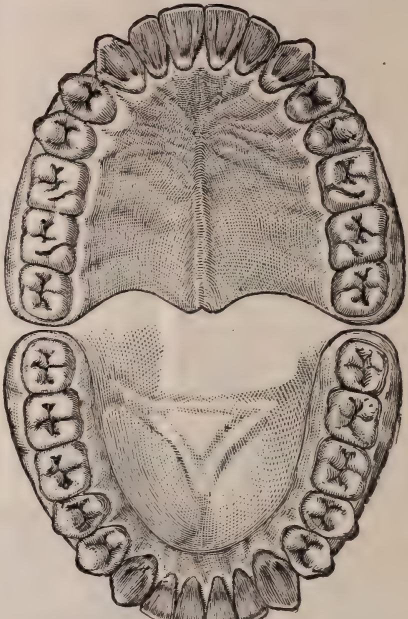

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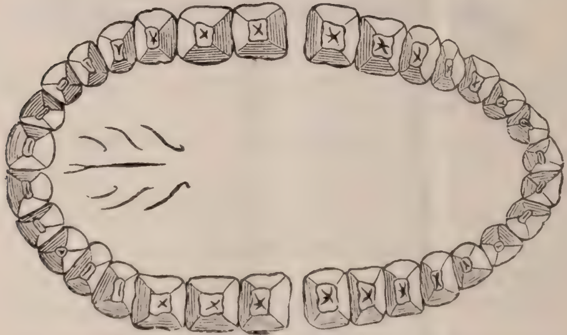

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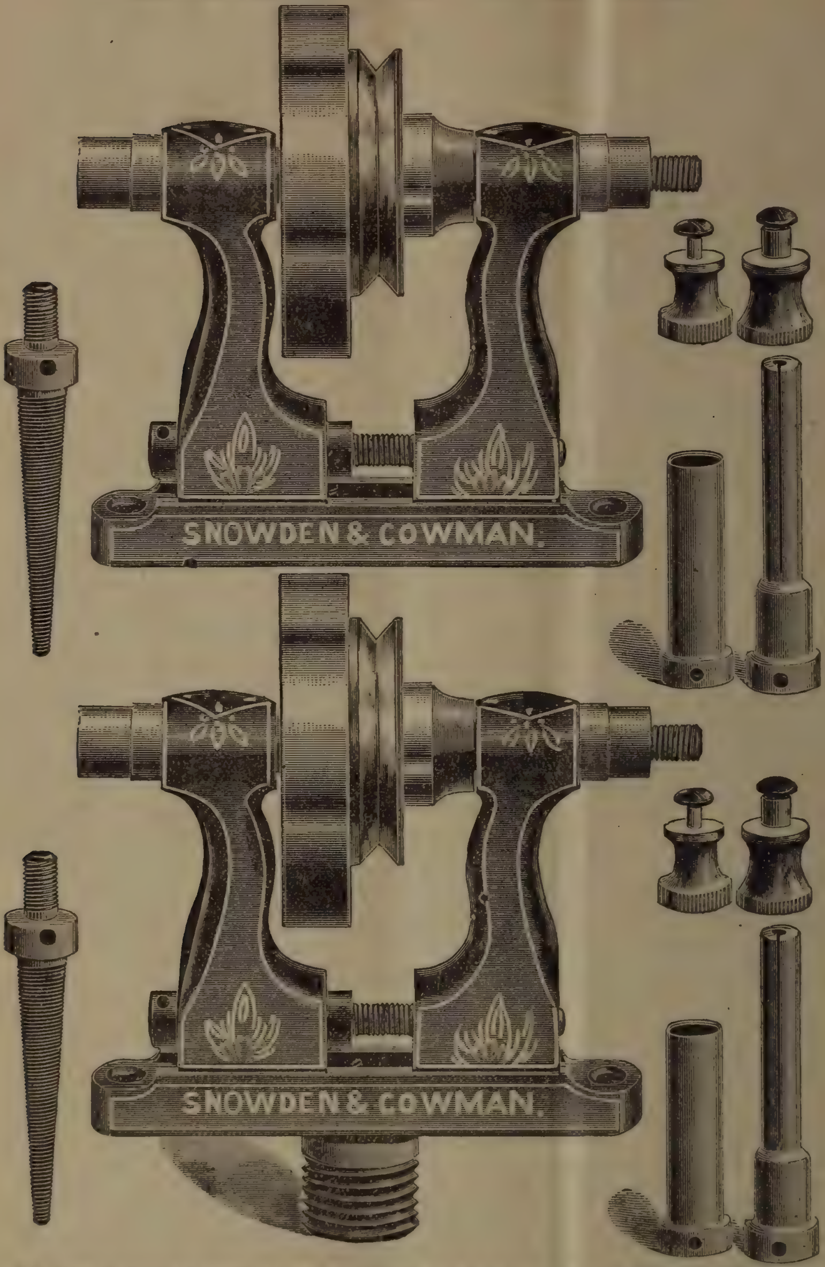
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SEPTEMBER, 1897.

THE
AMERICAN JOURNAL
OF
DENTAL SCIENCE.

EDITED BY

F. J. S. GORGAS, M. D., D. D. S.
RICHARD GRADY, M. D., D. D. S.

Vol. 31. THIRD SERIES No. 5.

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" Wm. B. Wise, Va.
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" Edwin, S. Niles, Mass.

At stated times during the Annual Sessions a number of the Corps of Clinical Instructors will hold Clinics and deliver Clinical Lectures.

Each year since its organization has added to the reputation and prosperity of this University Dental School, until now its graduates, in almost every part of the civilized world, are meeting with the success that ability will ever command. The past session was the most successful one in number of matriculates ever held; and visiting dentists from all parts of this country have expressed themselves as being astonished and gratified at the ability shown by the students when operating upon patients in the infirmary. Forming one of the departments of one of the oldest Universities in this country, its diploma is everywhere recognized and honored.

The instruction in both operative and mechanical dentistry is as thorough as it is possible to make it, and embraces everything pertaining to dental art. The advantages which the general and oral surgical clinics, to which the dental students are admitted, as indeed to all the lectures of the University, afford, cannot be overestimated. The many thousands of patients annually treated in the University Hospital, which is well known to be the largest Hospital in Baltimore, afford an abundance of material for the dental infirmary and laboratory practice, and the oral surgery clinics.

The Dental Infirmary and Laboratory Building is one of the largest and most complete structures of the kind in the world. The Infirmary is lighted by forty-seven large windows, and is furnished with the most improved operating chairs.

It has again become necessary to enlarge the Dental Building, making an Infirmary nearly one hundred feet long, and a laboratory eighty feet long and forty-three feet wide.

The Dental Infirmary and Laboratory are open daily (except Sundays) during the entire year for the reception of patients; and the practice for dental students has increased to such an extent that all the students during the past session have had an abundance of practical work in both operative and prosthetic dentistry. This means for practical instruction has already assumed such large proportions that the supply has been beyond the needs of the large classes in attendance during the past sessions.

The exceedingly large number of patients for the extraction of teeth affords ample facilities for practical experience to every student.

In addition to the facilities afforded by this institution for a thorough course of instruction in the theory and practice of dentistry, the clinics in the University Hospital enable the Dental equally with the Medical Students to become familiar with the diseases and operations of practical Surgery, excisions of jaw, partial or entire; tumors, cancerous or benign, of various parts of the buccal cavity; plastic operations for the restoration of cheek, lips, etc., may be mentioned as having been before the class during the year. The induction of anæsthesia by means of different agents—ether, chloroform, bromide of ethyl, nitrous oxide gas, all being used in the clinics—cannot fail to be of use to the student of Oral Surgery. Junior as well as Senior students are afforded every opportunity for practical instruction in both operative and mechanical dentistry.

The Lecture Halls in the University Buildings are large and well lighted; and every facility will be afforded for practical and theoretical dental instruction. Demonstrations in Anatomy, Physiology and Pathology, (for which an abundance of material is furnished **free of charge,**) also form an important part of the regular course. The Dissecting Room is large, well ventilated and lighted, and the Demonstrator of Practical Anatomy passes much of his time in assisting the students and directing their labors. **Dissecting Material is furnished in abundance, free of charge.**

Qualifications for Graduation: The candidate must have attended two full courses of lectures of five months each in different years at the **Regular** or Winter Sessions in this institution. The following, however, will be considered as an equivalent to an attendance on one course of lectures in this College:—One course in any reputable Dental College; graduation in a reputable Medical College with one year of dental pupilage in a dental infirmary. The student meeting either of the above requirements will have the privilege of presenting himself as a candidate for graduation at the end of but one Course of Lectures. The matriculant must have a good English education; a diploma from a reputable literary institution, or other evidence of literary qualifications will be received instead of a preliminary examination. All students, both juniors and seniors, have equal advantages in operative and mechanical dentistry in this institution throughout every session.

Graduation in Medicine: Graduates of the Dental Department of the University of Maryland are required to attend but **one session** at the University School of Medicine prior to presenting themselves as candidates for the degree of "Doctor of Medicine." (See Catalogue.)

The **Regular or Winter Session** will begin on the 1st day of October, and will terminate in March of each year.

The **Summer Session,** for practical instruction, will commence in March, and continues until the regular Session begins. Students in attendance on the Summer Session will have the advantages of all the daily Surgical and Medical Clinics of the University.

The Fees for the Regular Session are $100, Demonstrators' Fees included; Matriculation Fee, $5; Diploma Fee, for candidates for graduation, $30; Dissecting Ticket, $10.

For Summer Session, no charge to those who attend the following Winter Session.

Beneficiary.—A Beneficiary student will be received from each State, on the recommendation of the State Dental Society, on the payment of half of the tuition fees. Board can be obtained at from $3.50 to $5 per week, according to quality.

The University Prize and a number of other Prizes will be specified in the annual Catalogue.

Students desiring information and the annual Catalogue will be careful to give full address and direct their letters to

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The Annual Course of Instructions will commence on October 1st each year, and continue until the beginning of March following. The first weeks of the Session are devoted to Lectures on practical subjects especially the "Filling of Teeth," and Construction of Artificial Teeth, Clinics, Infirmary Practice and Demonstrations

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H. H. Hayden, M. D., Demonstrator of Anatomy.
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The Fifty-eight Annual Session will commence on the 1st of October, 1897. and continue until April, 1898

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The inside diameter is 4¼ inches, giving ample space for extra large flasks.

The facility with which the Mann Vulcanizer is operated is another decided advantage. The lid, instead of being screwed on to the boiler, rests on a shoulder formed on the casting, and is secured by a heavy steel clamping-bar and screw-bolt, B. One end of the bar is hinged to the side of the boiler at C, the other end being slotted to receive the screw-bolt, which is hinged to the other side of the boiler at D. Rubber packing between the lid and the shoulder on which it rests makes the joint steam-tight. The lid is removed by unscrewing the nut of the screw-bolt a turn or two, when the bolt drops out of the slot and the bar is turned back, leaving the lid free to be removed. This method gives a perfect fastening and affords much greater facility for opening and closing the boiler.

To remove a vulcanized case and replace it with another the nut of the clamping-bolt is loosened *a little at a time*, allowing the steam to escape gradually until the bolt is released, when the bar can be thrown back and the top of the boiler raised. A decided advantage, to which special attention is asked, is the bail E, a simple device, which greatly facilitates the handling of the Vulcanizer, especially when hot.

The bail is also useful in removing the boiler from the jacket, and to assist in loosening the screwbolt when closing or opening the boiler, and at all times when the boiler is to be lifted. When not in use it is readily removed.

The metallic thermometer-frame is screwed upon an iron cup-shaped seat in in the top, containing mercury, forming a "mercury bath."

We use for the Kerosene outfit of the Mann Vulcanizer the "4-inch Burner Kerosene Stove," which has a larger wick and will thus give more heat than the heater formerly sold for the purpose.

Fig. 1 is shown with steam-gauge attached.

Fig. 2 shows the bolt loosened, the bar thrown back, and the Vulcanizer open.

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Gartrell Steam-Gauge and Gas-Regulator adds $10.00 to these prices.

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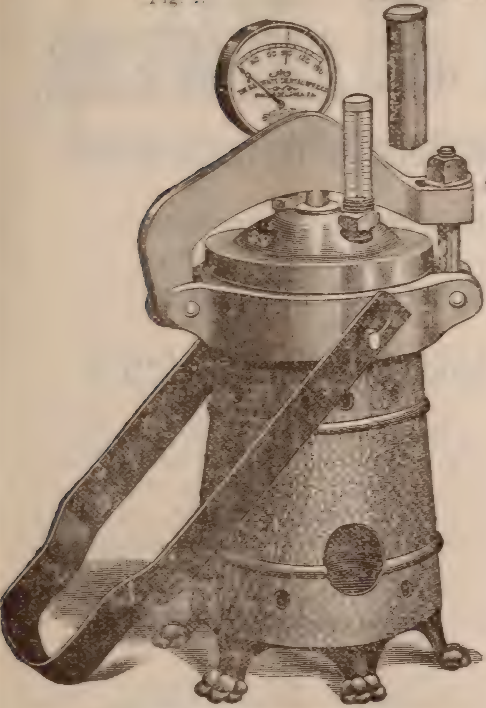
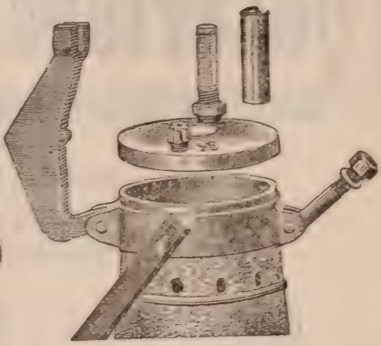
Fig. 1.



For Gas or Alcohol, and with Steam-Gauge.

Fig. 2.



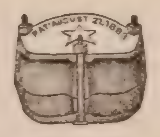
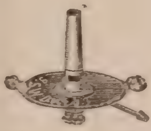
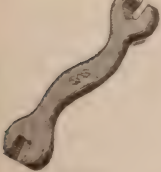


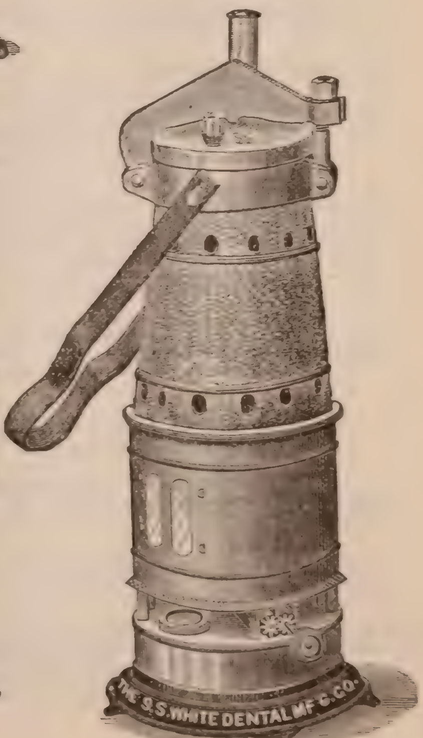
Fig. 3.



Gas Burner No. 12.



Alcohol Lamp No. 9.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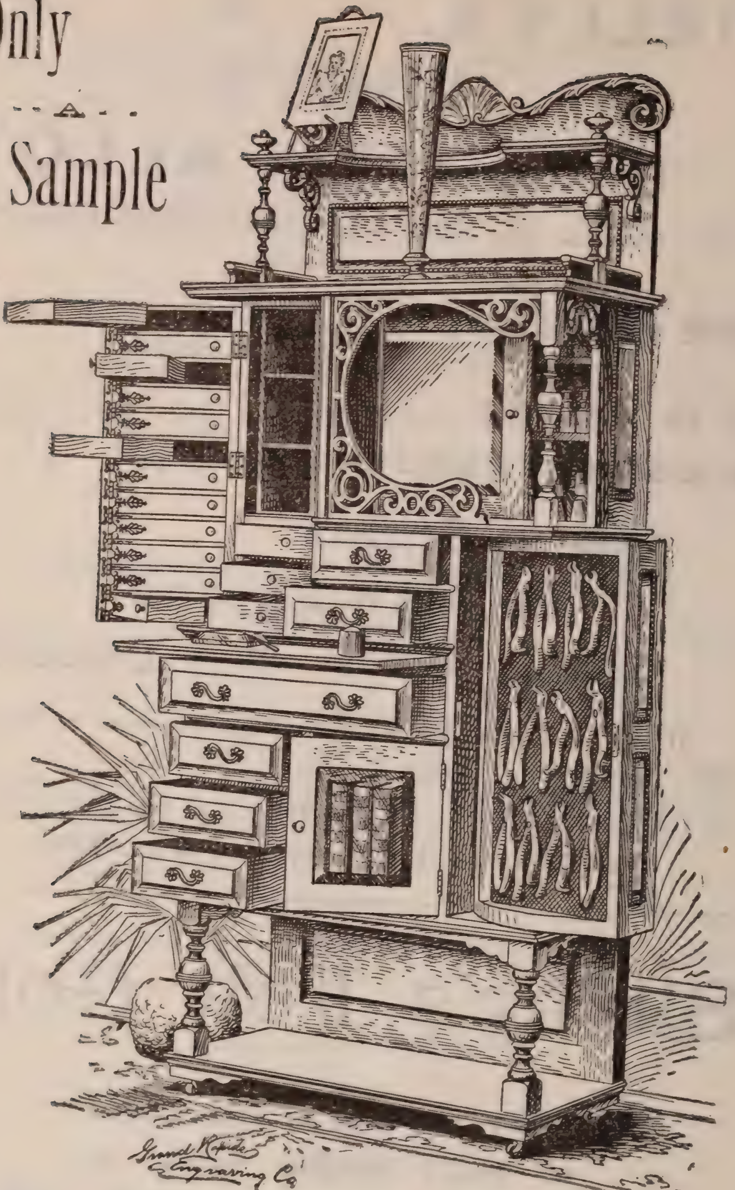

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IN COLOR we have succeeded in most nearly securing that bony texture which is so distinct from the porcelain-glitter we see in so many artificial teeth, and in the delicate blending of the shade they are eminently satisfactory. . . . .

IN STRENGTH they have the highest degree possible consistent with maintaining the other qualities required. It would be quite possible to make teeth much stronger by disregarding beauty of form, and making a coarse, thick block, but this ought to be, and doubtless would be, at once rejected by both dentist and patient. . . .

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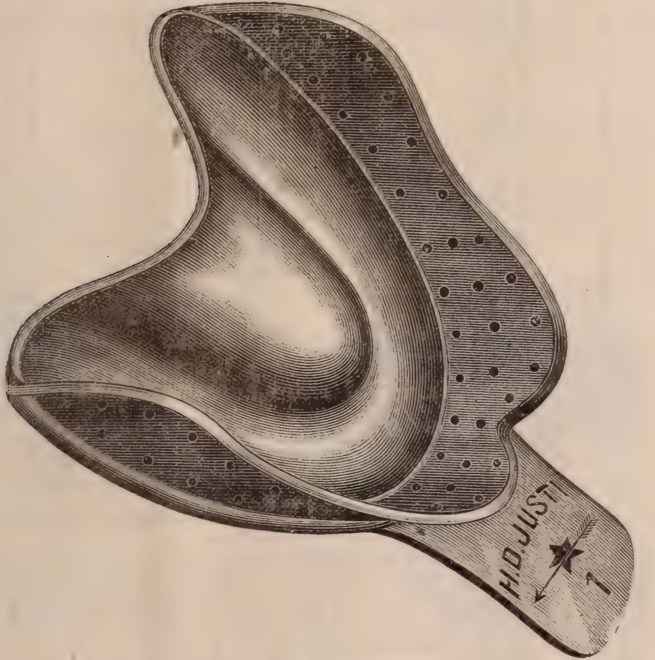

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WHILE plaster impressions are acknowledged to be the only reliable ones, every dentist has found a serious difficulty in obtaining them, owing to the tendency of the plaster on the outside the maxillary ridge to break away when the impression is withdrawn from the mouth. This usually breaks into small pieces, always difficult and often impossible to replace. From this cause sometimes several impressions have to be taken before one sufficiently perfect for use can be obtained.

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These upper Trays are five sizes, No. 1, the largest, being the same as the common No. 1 Tray; the others are evenly graded to No. 5, which is small enough for any case likely to be presented.

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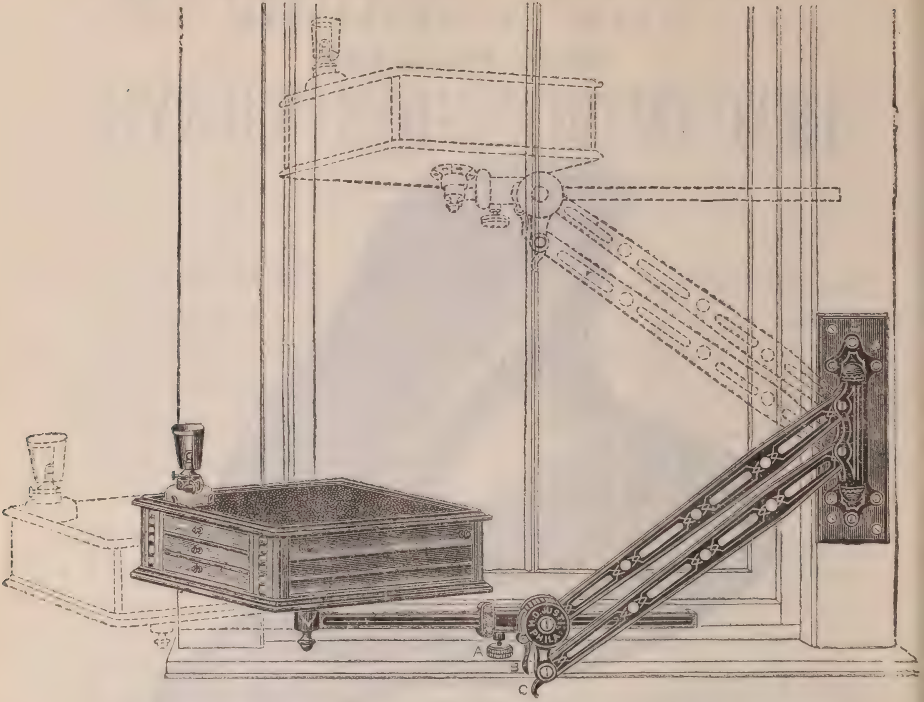

The success which this Bracket has achieved and the universal popularity and demand for it, has far exceeded our highest expectations; having made a number of improvements since its original introduction, we considered it essential to give a new illustration of it as it is now made, accompanied by the Grigg Table.

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DIRECTIONS FOR USE OF

BLAIR'S VAPORIZER

FOR THE TREATMENT OF PULPLESS TEETH.

1. If possible, always adjust rubber dam, or usual method of keeping tooth dry. Never use a broach or drill in canal until treated with vaporizer.

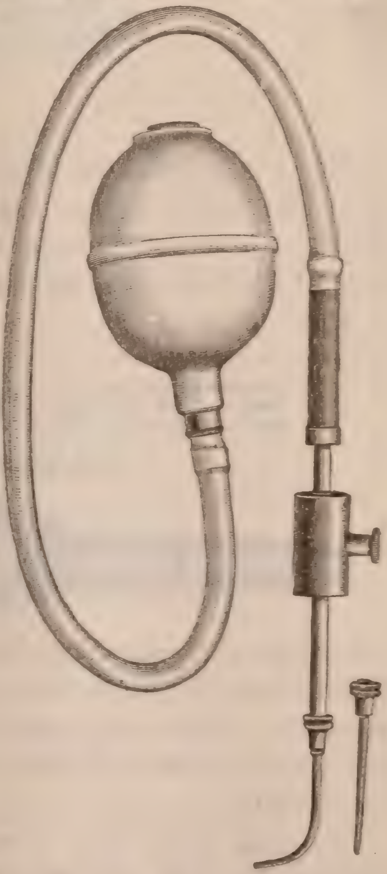
2. Clean out pulp chamber and expose openings of nerve canals; then introduce one of the points in opening of canal, and force the gas generated in the vaporizer into the canal until the root is saturated with the gas. Clean out canals thoroughly when possible, then treat again and fill immediately, if there is no indication of pus coming through the end of roots.

3. If there is a blind abscess in the tooth, stop up lightly with cotton and have patient return on third day. Three treatments will generally cure any case of blind abscess.

4. If there is a fistulous opening, try and force gas through same. One application is often all the case will require.

Open screw top on vaporizer and place small quantity of the iodoform (which accompanies each instrument) in chamber; then heat sufficiently, not too hot, to cause a thin stream of vapor to issue, on pressure of bulb, from point of vaporizer needle. Then insert in canal and force gas into same.

This gas will penetrate to every point in the canal and will absolutely destroy every vestige of animal life.



PRICE, EACH, $3.50.

MORRISON BROS., Sole Agents,

NASHVILLE TENN.

Hawe's Moulding Flasks.

Fig. 1.

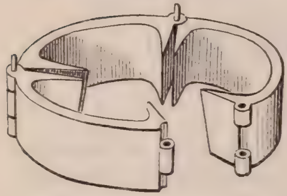


Fig. 2.

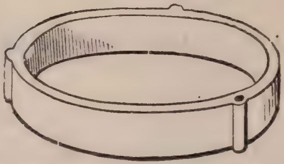


Fig. 3.

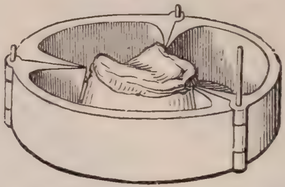
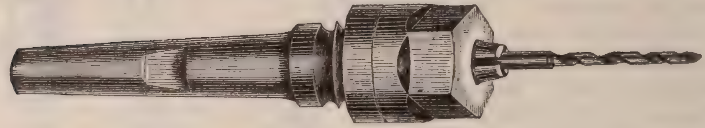


Fig. 1 represents the lower section of the Flask, slightly opened, to show the Joints. Fig. 2 is the upper section. When ready for use, the lower section is closed and confined by a Pin, and the Plaster Model placed in it, as represented in Fig, 3.

Price - - - - - $3.00

STEEL CHUCK.

PATENTED.



The above cut represents a very complete SELF-CENTRING, THREE-JAWED STEEL CHUCK, carefully made, durable and convenient. The wearing parts are hardened ; the jaws have a good bearing on the drill, and hold securely either a straight or tapered shank.

It carries Drills, Burs, or Corundum Points of the DENTAL ENGINE, one-eighth of an inch in diameter, and under, and made to fit our AMATEUR, UNITED STATES SHORT SPINDLE AMERICAN SHORT SPINDLE, and HAND and FOOT LATHES.

Price, with Wrench, - - - $2.00.

REDUCED PRICES

OF

Dental Machinery of Our Own Design.

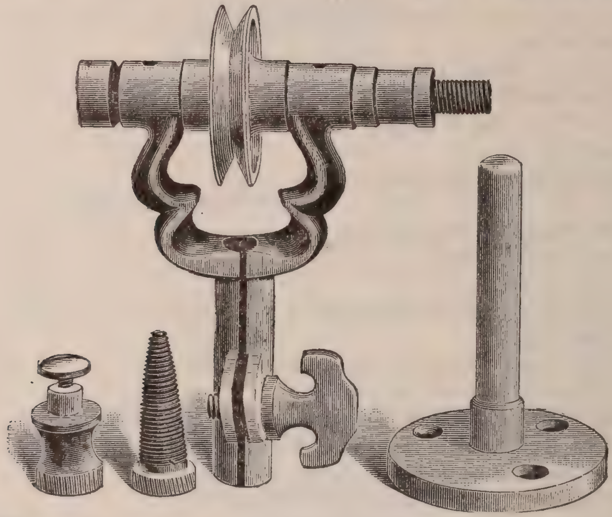
Amateur Lathe—Complete,	$25 00
" " Head, &c. all above stand,	13 00
" " Stand and Cord,	13 00
United States Lathe—Long Spindle,	15 00
" " " Short Spindle,	15 00
" " " Stand and Cord,	11 00
American Lathe,	14 00
" " Extra Large Driving-Wheel,	15 00
Diamond Lathe—Complete,	13 00
" " Fly Wheel,	7 00
Fly-Wheel No. 1,	7 00
Portable Hand or Foot Lathe—Complete,	5 50
" " " " Without Foot Attachment,	5 00
Quadrant Hand Fly-Wheel Lathe,	4 50
Hand Fly-Wheel Lathe,	4 50
Hand Lathe,	4 00
Diamomd Lathe Head—Polished Brass,	6 00
Socket Table Head,	4 50
U. S. Table Head—Holes in base to screw to table,	4 00
Engine Lathe Head—Nickel Plated,	4 00
American Lathe Head—Holes in base to screw to table,	4 00
Ladles and Handle—Two Ladles and one Handle,	75
Extension Brackets—Weight only five pounds,	6 00
Patent Portable Head-Rest—Nickel Plated,	10 00
Portable Head-Rest—Weight only four pounds, Bright Parts Nickel Plated,	4 50
Soldering Lamps,	90
Flask Presses—Well made and very strong—No. 1 Old Style,	1 50
" " " " " " " No. 2 New Style,	1 50
Ingot Moulds—Broad base with handles, No. 1,	2 25
" " " " " " No. 2,	2 75
" " " " " " No. 3,	3 25
Bailey's Moulding Flasks—Per set of 2,	75
Steel Chuck,—to fit our Amateur United States, American, Short Spindle and Hand and Foot Lathe,	2 00
Welch's Nerve Paste,	1 00
Britannia Impression Cups—long handles, various styles and 29 sizes--each,	25

☞ **We make no charge for Boxing any of the above goods.**

SNOWDEN & COWMAN MFG. CO.

9 West Fayette Street, Baltimore, Md.

ENGINE LATHE HEAD FOR BRIDGE AND CROWN WORKERS.



THIS LATHE HEAD CAN BE ATTACHED TO SHAW ENGINE BY SLIPPING SOCKET OVER STANDARD AND TIGHTENING THUMB SCREW. IT IS VERY LIGHT AND NEATLY NICKEL PLATED. IT RUNS VERY SMOOTHLY AND LIGHTLY. IT ALSO CAN BE MOUNTED ON TABLE AS SHOWN IN CUT BY THE SMALL ATTACHMENT. . . . .

PRICE COMPLETE - - $4.00.

VULCANIZERS

Our Own Manufacture.

WE ARE MAKING 3 STYLES.

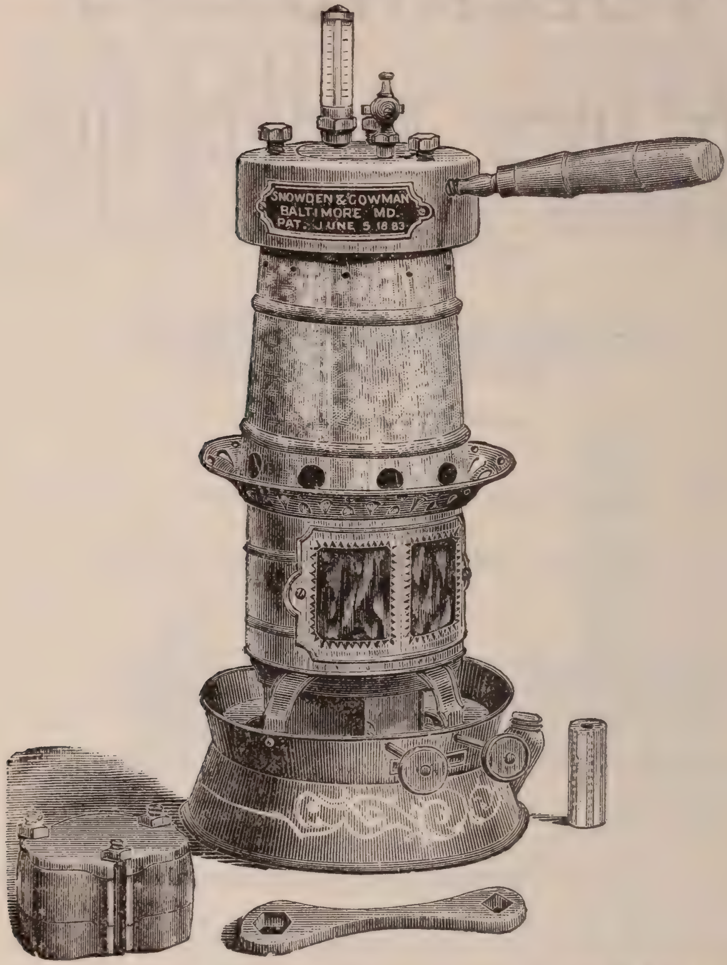
Complete with Coolidge's Gas and Time Regulator,	$25 00
Complete with Gage and Blow-off Cock for Gas or Kerosene,	21 00
Complete with Thermometer and Blow-off Cock for Kerosene or Gas,	18 00
Vulcanizers complete with Two Brass Flasks, instead of Iron Flasks, adds	1 50
Vulcanizers complete without Two Iron Flasks, deduct	1 50
Vulcanizers complete, less Kerosene Stove, deduct	1 70
Vulcanizers complete, less Gas Stove, deduct	1 00
Large Iron Flasks, each	1 00
Large Brass Flasks, each	1 50

SNOWDEN & COWMAN MFG. CO.

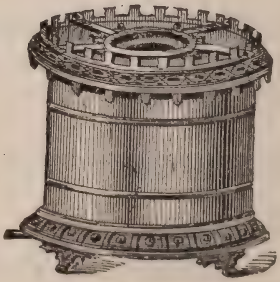
9 W. Fayette Street, BALTIMORE, MD.

SNOWDEN & COWMAN MFG. CO.'S

New Patent Vulcanizer.



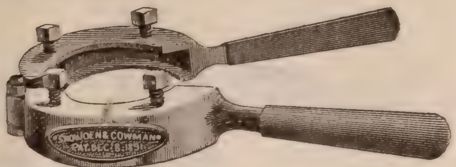
Complete for Kerosene or Gas, with Two Large Malleable Iron Flasks, $18.00

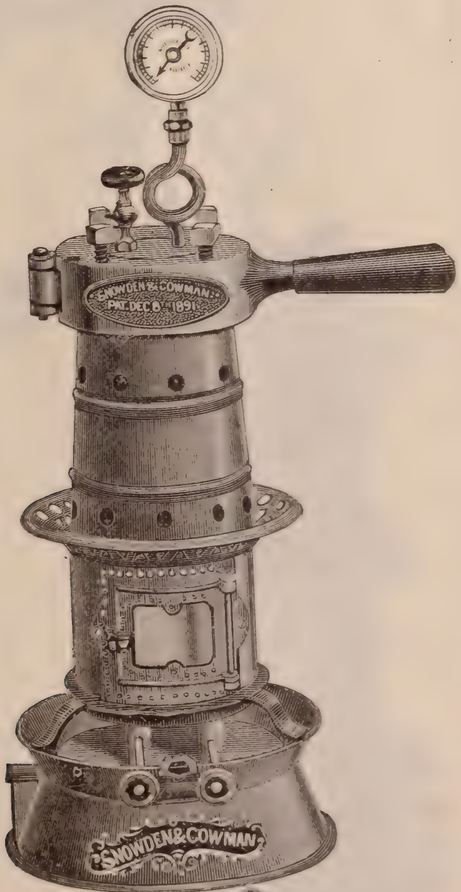


Gas Stove.

PATENTED DEC. 8, 1891.

Snowden & Cowman Mfg. Co.'s Hinged Clamp Vulcanizer.



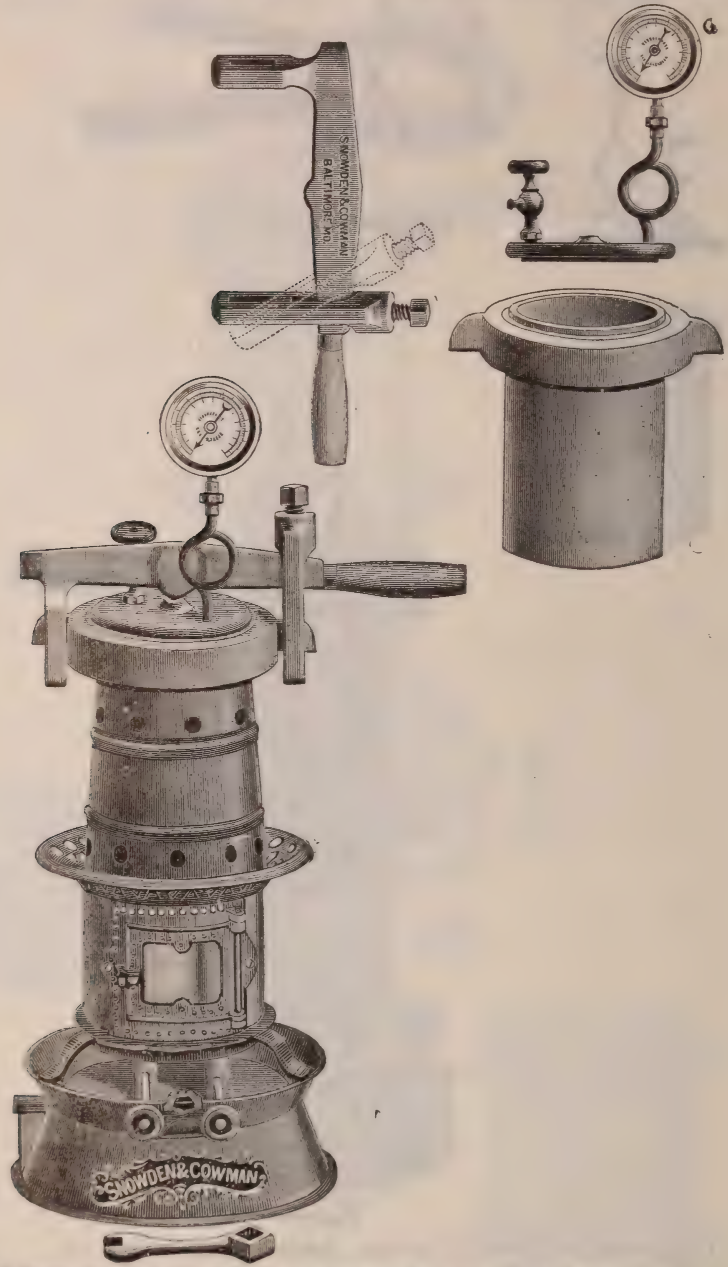


Price complete with 2 Flasks Improved for Gas or Kerosene with Guage as represented, ... *$21,00*

With Thermometer and without Guage, ... *18.00*

CIRCULARS ON APPLICATION.

Snowden & Cowman Mfg. Co.'s Improved Cross-Bar Vulcanizer



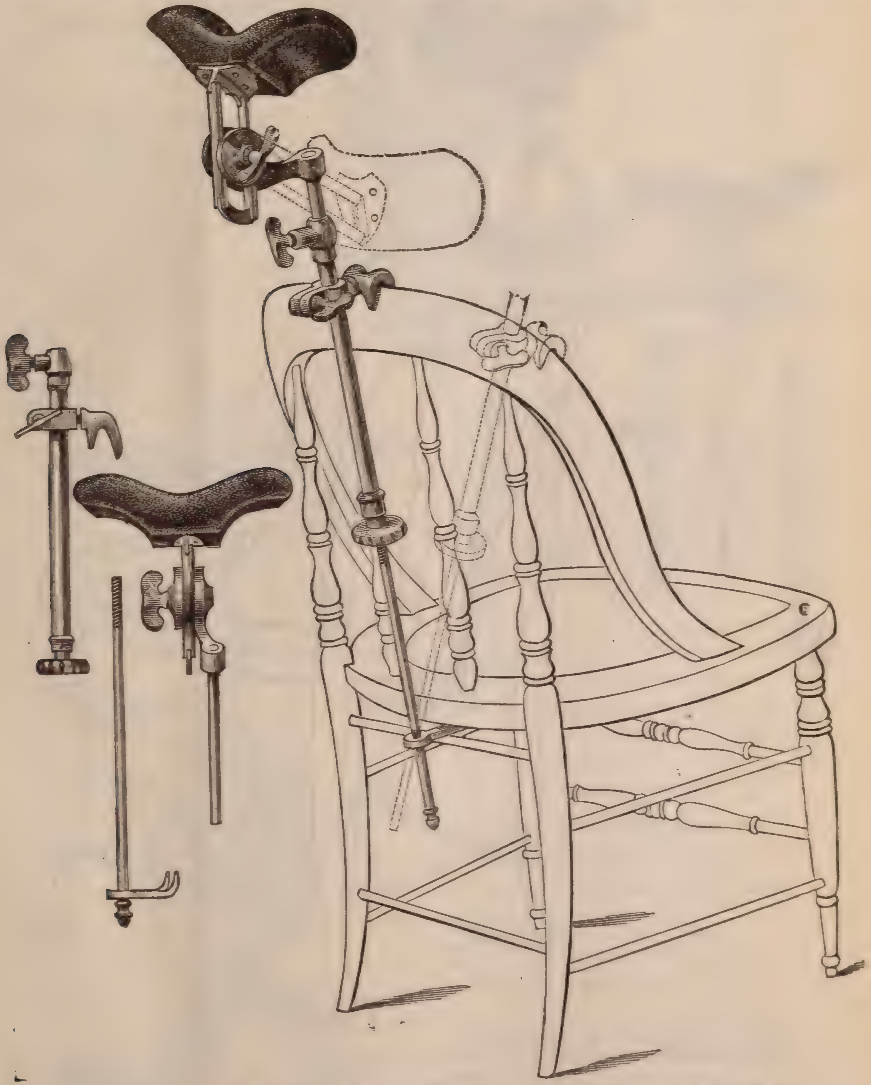
Price complete with two Flasks for Gas or Kerosene, with Guage as represented, ...	$21.00
With Thermometer and without Guage, ...	18.00.

CIRCULARS ON APPLICATION.

Snowden & Cowman Mfg. Co.'s

—NEW—

Portable Head-Rest.



PRICE, Full Nickel Plated, - - $10.00

—MANUFACTURED AND FOR SALE BY—

SNOWDEN & COWMAN MFG. CO.

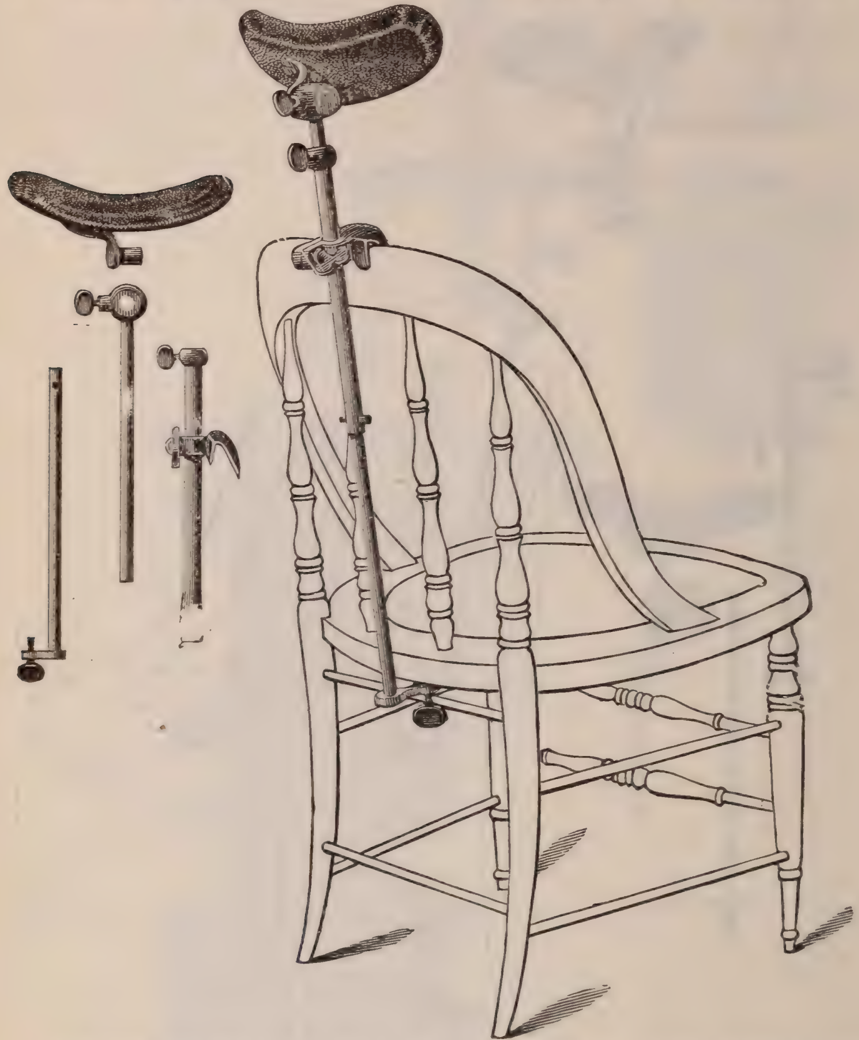
9 West Fayette Street Baltimore Md.

Price Reduced!

SNOWDEN & COWMAN MFG. CO.'S

IMPROVED

Portable Head-Rest.

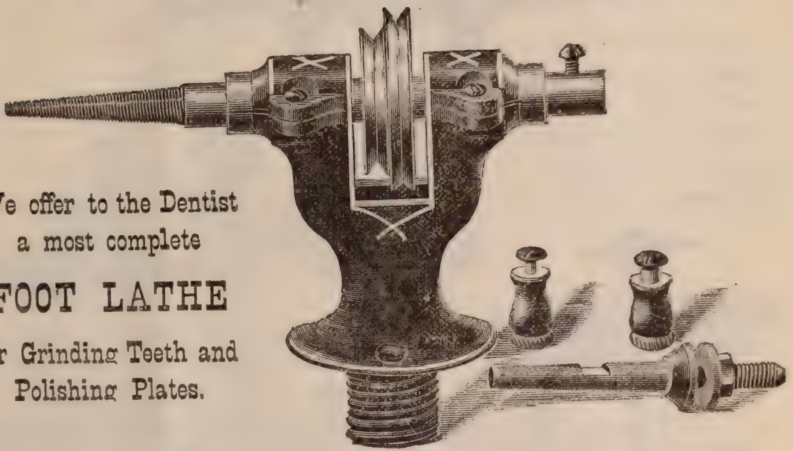


This Head-Rest can be attached to any chair, is very firm, and can be raised, lowered or moved backward or forward without interfering with attachment to the chair. Handsomely painted and bright parts nickel-plated.

It weighs only 4 lbs., and occupies a space only of 13 x 4 inches. PRICE, $4.50.

Price Reduced.

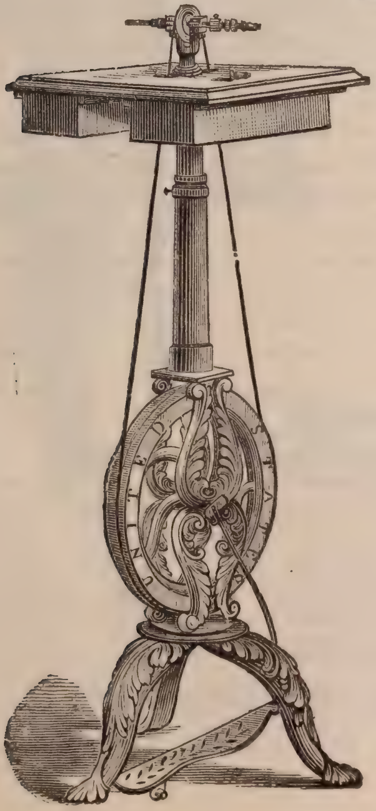
UNITED STATES LATHE.



We offer to the Dentist
a most complete

FOOT LATHE

for Grinding Teeth and
Polishing Plates.



It has been gotten up in a superior manner, great care having taken to make it durable and efficient. It has a movable column and table, which is capable of being elevated eight inches, to accommodate the operator in either a sitting or standing posture.

It can be packed in a box sixteen inches square, and can be set up in a few minutes, presenting a very neat and pleasing appearance, suitable for the office or laboratory. It is finished in bronze, and runs very light and steady.

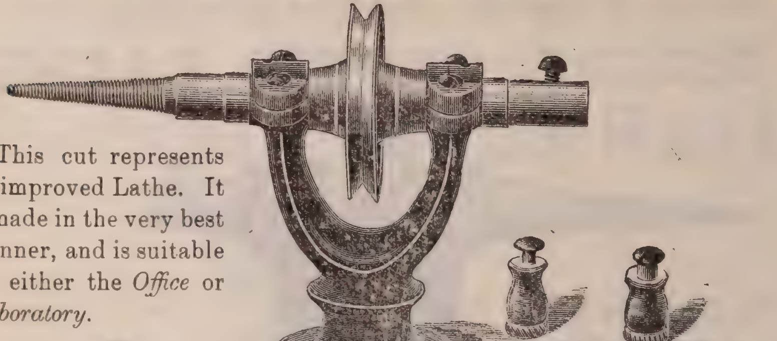
Price of Lathe complete with Short Spindle, as per cut,	$15.00
Price of Lathe complete with Long Spindle,	15.00
Price of Stand only, including Cord and and Coupling,	11.00

Snowden & Cowman Mfg. Co.,

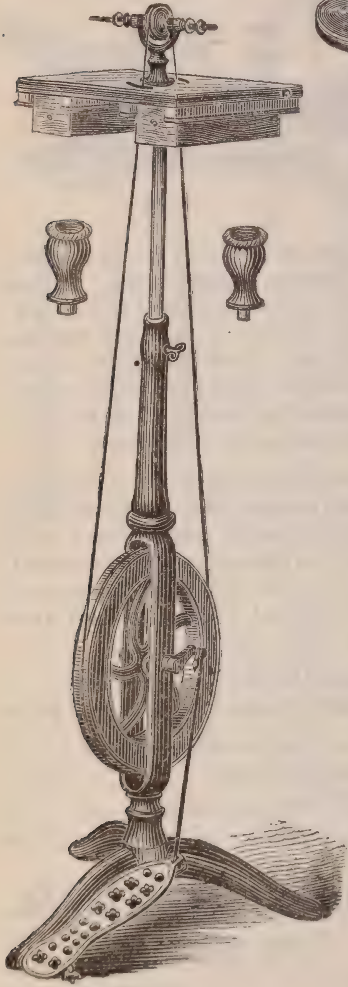
9 W. Fayette Street,

BALTIMORE, MD

AMERICAN LATHE, PRICE REDUCED.



This cut represents an improved Lathe. It is made in the very best manner, and is suitable for either the *Office* or *Laboratory*.



It has a solid spindle, one end of which is a taper screw for brush or felt wheels, and also, a space for a large corundum wheel. The other side of the spindle has a space for a large corundum wheel and a screw to receive the chucks, on which very small corundum wheels can be placed.

It has a movable column and table, which is capable of being elevated ELEVEN inches, to accommodate the operator in either a sitting or standing posture.

Either end of the spindle can be thrown towards the operator, if more convenient, by the set screw at the top of the column.

We also make for this Lathe a Socket Spindle—similar to our U. S. Lathe Short Spindle.

Price of Lathe, as per cut, with two Chucks, - - - -	$14.00
Price of Lathe, with Socket Spindle, with two Chucks, - -	14.00
Price of Lathe, with Extra Large Driving Wheel, - - -	15.00
Chucks, extra, - - - -	.15

☞ No charge for Boxing.

SNOWDEN & COWMAN MFG. CO.,

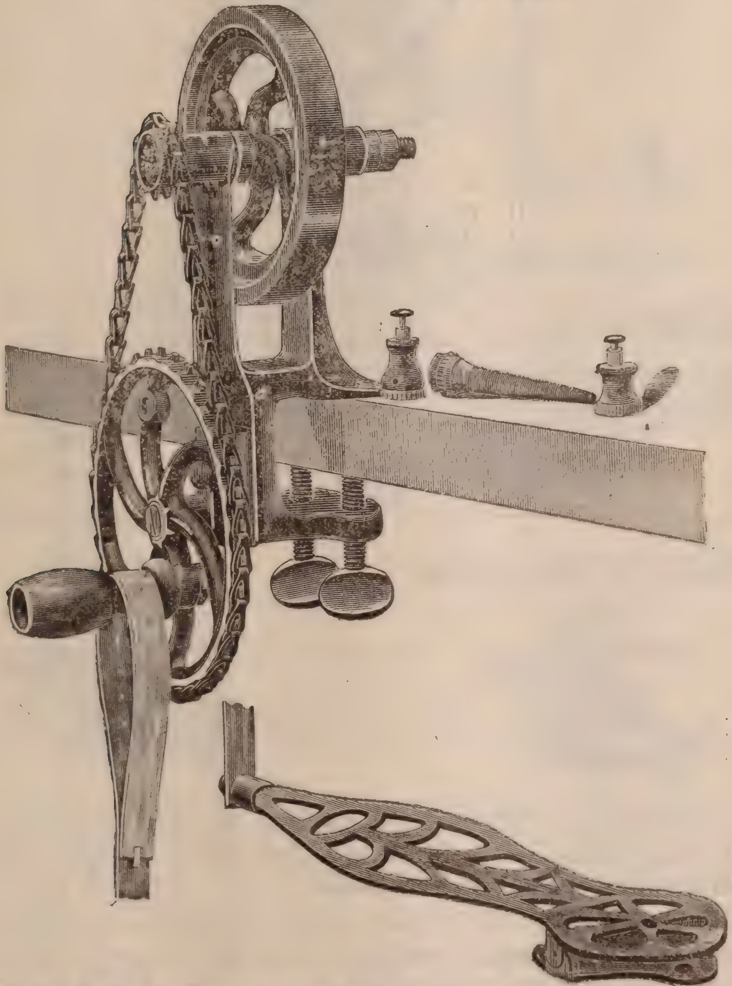
9 W. Fayette Street, Baltimore

SOMETHING NEW FOR TRAVELLING DENTISTS.

LINK CHAIN LATHE,

TO BE USED EITHER BY HAND OR FOOT POWER.

PRICE, - $7.00.



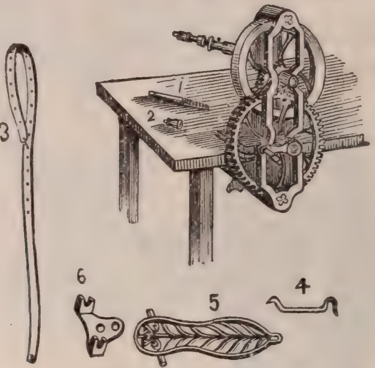
The Fly Wheel with Spindle is driven with an Endless Chain and makes very little noise, as it is propelled by large and small Sprocket Wheels, this gives it a very steady movement and does not require as much power as a geared lathe. It is fastened to table or bench by two Thumb Screws which make it impossible to turn when both are screwed up. It is very light and can be carried in a small satchell.

Snowden & Cowman Mfg. Co.,

9 W. Fayette Street, BALTIMORE, MD.

PRICE REDUCED.

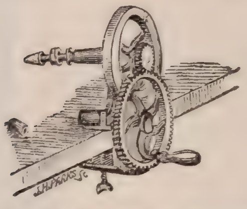
Portable Hand or Foot Lathe.



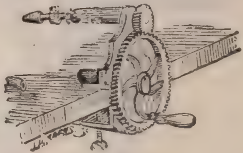
The above is a cut of a PORTABLE HAND OR FOOT LATHE, which is very efficient, manufactured for the traveling dentist; weighs under 7 pounds, and occupies the space of 6 by 9 inches. Members of the profession who have seen it pronounce it first rate.

Price, complete, - - - - -	$5 50
Without Foot Attachment, - - -	5 00

Hand Fly Wheel Lathe.



Hand Lathe.



HAND FLY WHEEL LATHE.—It is intermediate between the Hand Lathe, and the Hand and Foot Lathe; it weighs only three pounds and is a first rate Lathe. - - PRICE, $4 50

HAND LATHE.—It is small, strong and durable, and weighs only two and a quarter pounds; we have sold a large number of these Lathes,—giving great satisfaction. - - PRICE $4 00

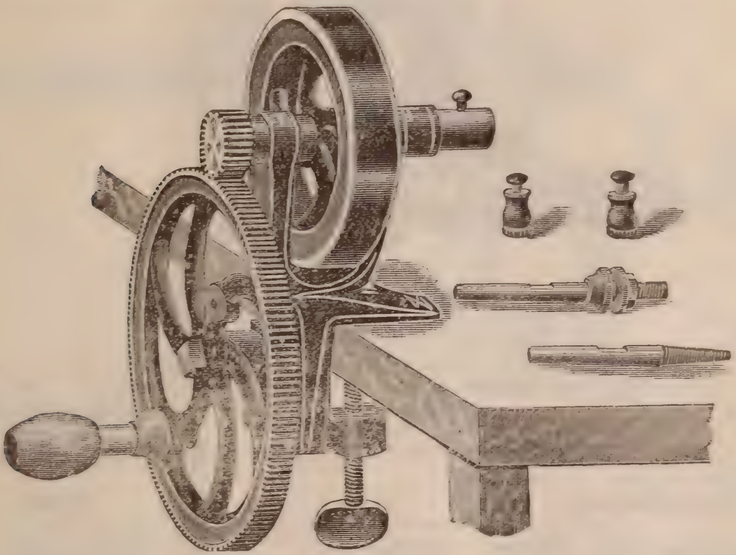
☞ All of the cog wheels of our Lathes are turned and cut on a machine, and are uniform, which makes them run true and with little noise.

SNOWDEN & COWMAN MF'G CO.,

No. 9 West Fayette St., Baltimore.

NEW HAND FLY WHEEL LATHE.

This Lathe is made larger and heavier and can be used with foot. It runs very steady and makes a good lathe for either Office Laboratory or to carry around. It is very neat.



PRICE, - - - -	$5 00
" with Foot Attachment and Strap,	5 50.

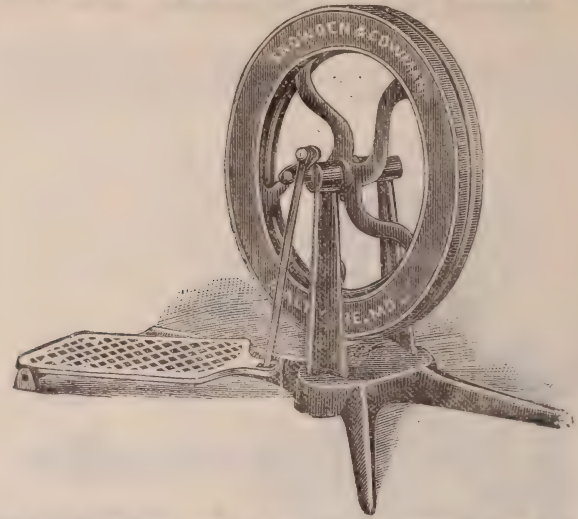
'The proof of the pudding is in the eating."

If the experience of dentists generally did not prove OUR GOLD AND PLATINA ALLOY a superior filling they would not be willing to pay nearly double more for it than the price of common amalgams. I suppose there is not another alloy or amalgam so generally used by our better class of dentists.

Welch's Alloy, 1 oz. $3.00; 2 oz. $5.50, 4 oz. $10.00; 10 oz. $22.00.
Welch's Amalgam, 1 oz. $2.00; 2 oz. $3.50; 4 oz. $7.00; 10 oz. $15.00.
Welch's Oxiphosphate, large $1.50; medium $1.00.
Liquids or powders, large 75 cts.; medium 50 cts.

T. B. WELCH, - - - - Vineland, N. J.

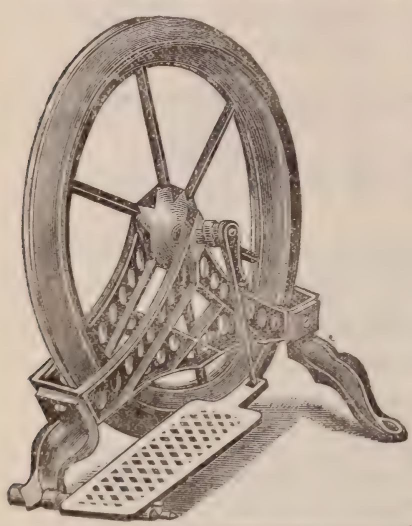
FLY WHEEL, No. 1, NEW.—Price Reduced.



This Fly Wheel weighs 30 lbs., with diameter of wheel 15 inches. The stand is the stiffest and steadiest of any driving wheel in the market. Owing to the position of the feet and the peculiar arrangement of the treadle, the wheel has an immense power and is very light running. In boxing remove pin that connects treadle with rod and fold treadle by side of the wheel. Weight complete, 46 lbs.

Price Boxed, - - - - - - **$7.00**

DIAMOND FLY WHEEL.—Price Reduced.



This fly-wheel is eighteen inches in diameter, with wrought iron spokes, in an iron frame, complete in itself, can be set any where, and runs very steady.

It has sufficient power and speed for any Dentist's Lathe Head. The feet are easily detatched, and all can be packed in a smaller box than any other Fly Wheel of its dimensions in the market.

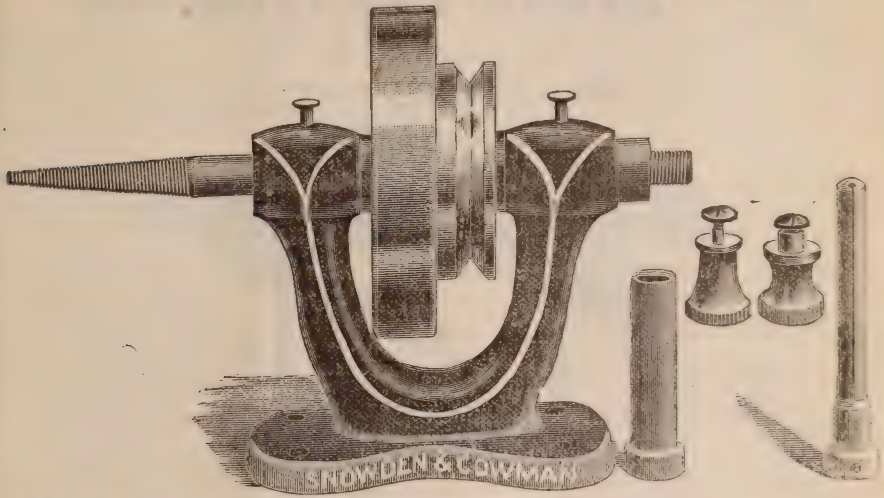
Price Boxed, - - **$7.00.**

SNOWDEN & COWMAN MFG. CO.,

No. 9 W. FAYETTE STREET,

Baltimore.

OUR NEW LATHE HEAD.

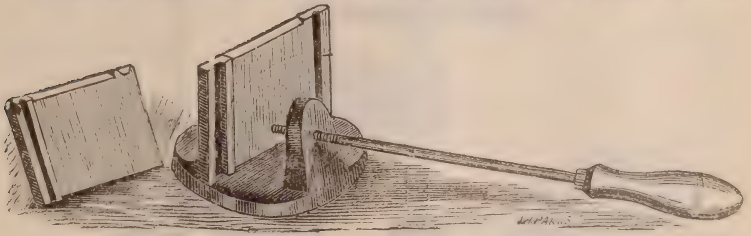


VERY SIMPLE AND EASY RUNNING.
ADJUSTMENT QUICKLY MADE.
VERY DURABLE AND STEADY.

PRICE WITH 4 CHUCKS, - - - $5.00.

SNOWDEN & COWMAN MFG. CO.'S

INGOT MOULDS.



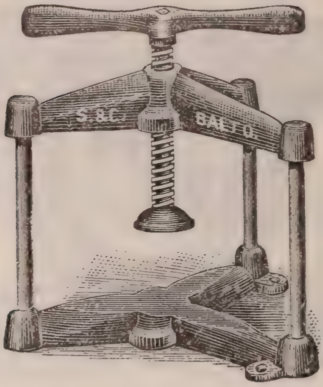
No. 1, will cast a plate from one half of an inch to two inches in width, also a round, half-round and square bar. -	$2.25
No. 2, will cast a plate from one half of an inch to two and three quarter inches in width, also a round, half-round and square bar. - - - - - -	$2.75
No. 3, will cast a plate 3 inches wide and 4 inches long also round, half-round and square bar, -	$3.25

LIBERAL DISCOUNT TO THE TRADE.

Snowden & Cowman Mfg. Co's

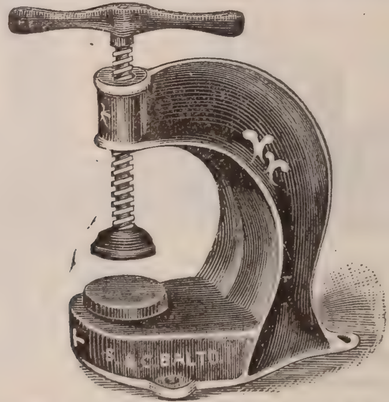
Flask Presses.

No. 1, Old Style Improved.



This Press is intended to close the flask after packing with rubber. It is of great advantage, saving screws and flasks. The upright rods are of wrought iron and the handle of the screw can be detached. They are *well made* and *very strong*, and has been made larger, so that it will take any Flask in the market. Price, - - - - $1.50.

No. 2, New Stvle.

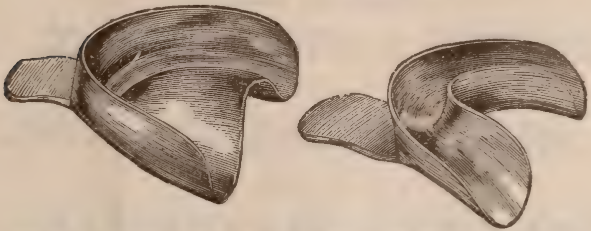


This Press is made of cast iron, very heavy, with steel screw and detachable handle. It has a Pivot Plate to level up the flask, insuring always a central pressure on the flask ; will take any flask in the market. Price - - $1.50

BRITANNIA IMPRESSION CUPS

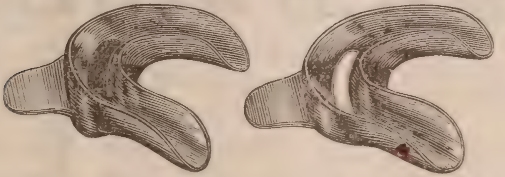
LONG HANDLES.

We Manufacture the following Sizes and Varieties:



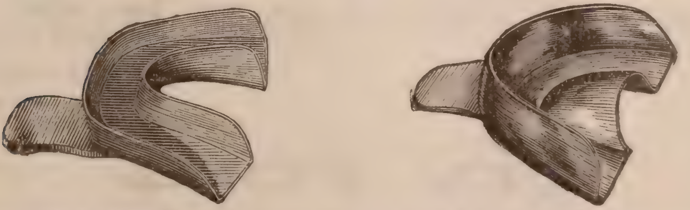
UPPER, Nos. 00, 0, 1, 2, 3, 4, 5, 6, 7.—(No. 00 is the largest size.)
LOWER, " 1, 2, 3, 4, 5. —(No 1 is the largest size.)

PARTIAL LOWER CUPS.



ENCLOSED CAVITY, Nos. 9, 10, 11.—(No. 9 is the largest size.)
OPEN CAVITY, Nos. 6, 7, 8. —(No. 6 is the largest size.)

UPPER AND LOWER CUPS.



PARTIAL UPPER—Flat Bottom, Nos. 8, 9, 10, 11—(No. 8 is the largest.)
FULL LOWER— " " " 12, 13, 14—(No. 12 is the largest.
PRICE............................Each.....................25cts

SNOWDEN & COWMAN MFG. CO.

9 West Fayette Street, Baltimore Md

Dental Depot,

ESTABLISHED 1856.

SNOWDEN & COWMAN MFG. CO.

MANUFACTURERS OF

Lathes, Head Rests, Vulcanizers, Impression Cups, &c.

AND DEALERS IN

DENTISTS' MATERIALS,

No. 9 W. Fayette St., between Charles & Liberty Sts

BALTIMORE.

GOLD FOIL.

	Per 2 oz.	oz.	½ oz.	¼ oz.	⅛ oz.
Abbey & Sons,		$32.00	$16.00	$8.00	$4.
Valleau's		30.00	15.00	7.50	4.
Ney & Co's.		29.00	15.00	7.50	4.
S. S. White's, ¼ Century,	$58.00	30.00	15.00	8.00	4.
" " Globe,	58.00	30.00	15.00	8.00	4.
" " 1000 Fine,	58.00	30.00	15.00	8.00	4.
R. S. Williams, Cylinders, A,		30.00	15.00	8.00	4.00
" " " B,					
" " Rect. Pellets,					
" " Standard,					
Watt's Crystal,		32.00	16.00	8.00	4.00
E. Rowan & Co.		29.00	15.00	3.20 per 1-10 oz.	
" untrimmed,				5.60 per 1-5 oz.	
"				2.90 per 1-10 oz.	

TIN FOIL.

Ney & Co's- -Nos. 4, 6, 8, and 10, - -	40 Cents per Book
S. S. White's, - - - - - - -	30 " " "
Nos. 4, 6, 8 & 10, (extra tough)	40 " " "

SNOWDEN & COWMAN MFG. CO.,

No. 9 West Fayette Street Baltimore

PORCELAIN TEETH.

GREATLY REDUCED.

We keep on hand a large assortment of Teeth of the following Manufacturers, which we

SELL AT THEIR REDUCED PRICES.

The S. S. White Dental Manf. Co.'s

	Each.	$10 lots.	$25 lots.	$50 lots.	$100 lots.	$300 lots.
Plain Rubber & Plate Teeth	.12	.11½	.11	.10	.09	.08
Gum Sectional Rubber, Plain Plate, long Pins, Single Gum Rubber and Gum Plate Teeth,	.12½	.12	.11½	.11	.10	.09

H. D. JUSTI & SON'S.

	Each.	$10 lots.	$25 lots.	$50 lots.	$100 lots.
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Chicago Refining Co's	4.00	"	"
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Caulk's White Alloy,	3.50	"	"
Lawrence's	3.00	"	"
Arrington's	2.00	"	"
King's,	3.00	"	"
Globe Alloy,	2.50	"	"
Alba "	2.50	"	"

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Dr. Flagg's Plastic Enamel, per Pk'g,	2.00
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½ " " any above "	1.50
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Poulson's Mineral Plombe, " "	2.50
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Sam'l S. White's	"	2.25

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THE MORRISON DENTAL CHAIR.

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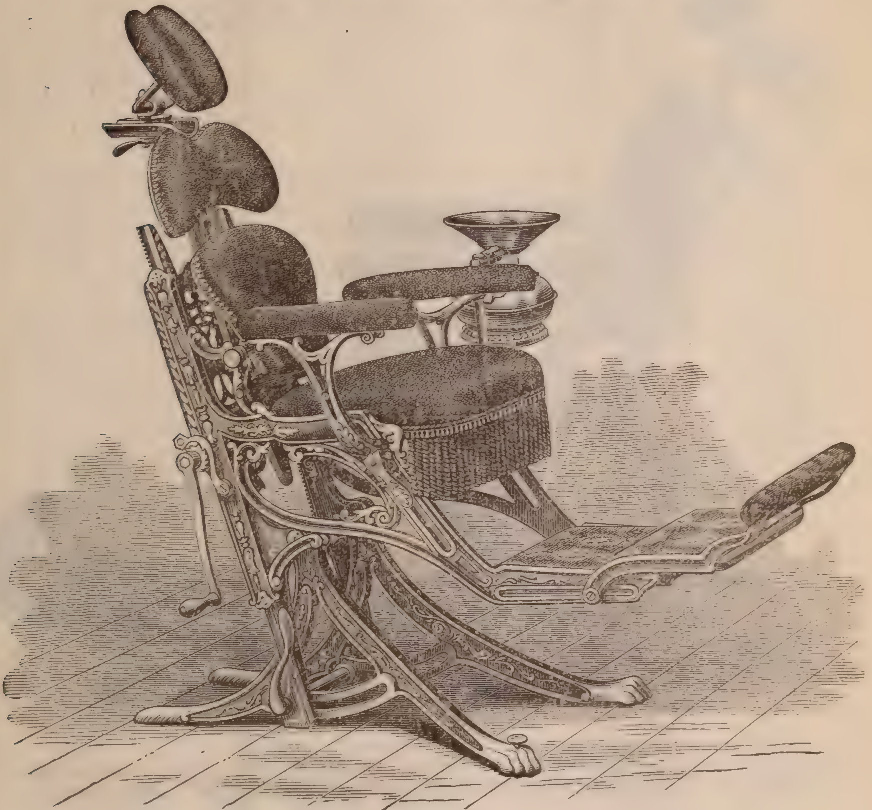

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In Real Morocco, Embossed	110.00
In finest quality Green or Garnet Plush, puffed and trimmed with Silk Plush, full Turkish Upholstery	120.00

The Illustration shows No. 4 Spittoon, No. 3 Bracket, No. 3 Socket, which are extra and add $8.00 to above price.

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We supply either style of the Morrison Chair, with or without Casters. When ordered with Casters, the price is $10.00 extra.

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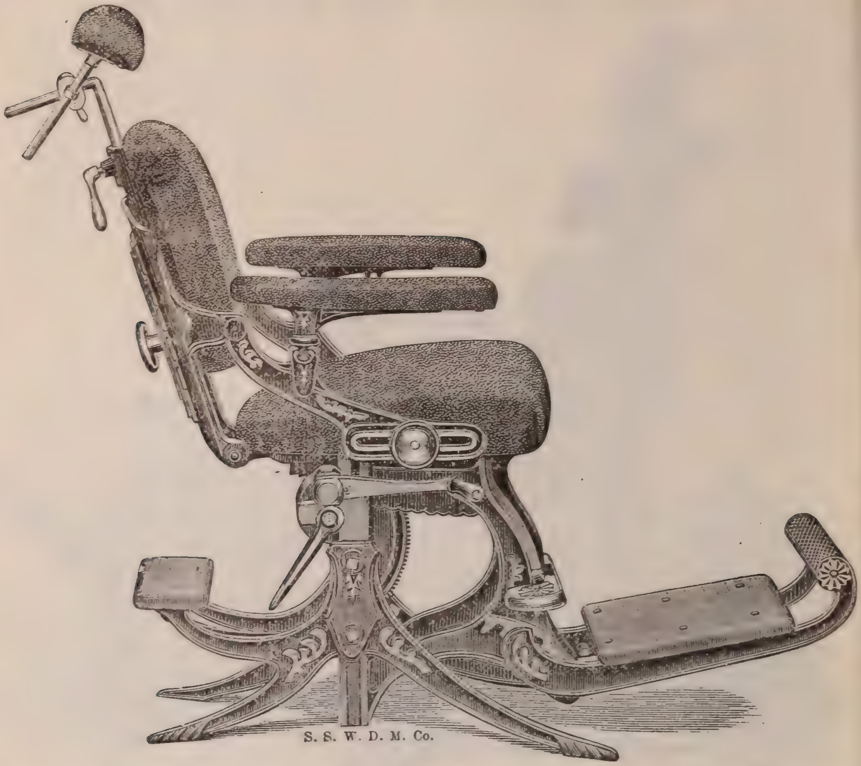

Patented December 28, 1875; July 3, 1877; November 20, 1877; March 9, 1880; May 22 1883. Re-issues July 4, 1876; March 19, 1878; August 27, 1878. Others pending.

This Chair was designed especially to meet a demand for a chair which, while affording a variety of essential movements, could be sold at a lower price than the Wilkerson, The S. S. White Pedal-lever, or the Morrison.

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Price, upholstered in Corded Material, - -	$ 70.00
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For Recording all Operations in Dentistry

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TITLE PAGE, INDEX or ALPHABET, and the pages numbered. printed on fine paper with a DIAGRAM of the teeth at the top of each page, neatly and substantially bound in muslin.

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With Supplemental Lift and Disk Base.

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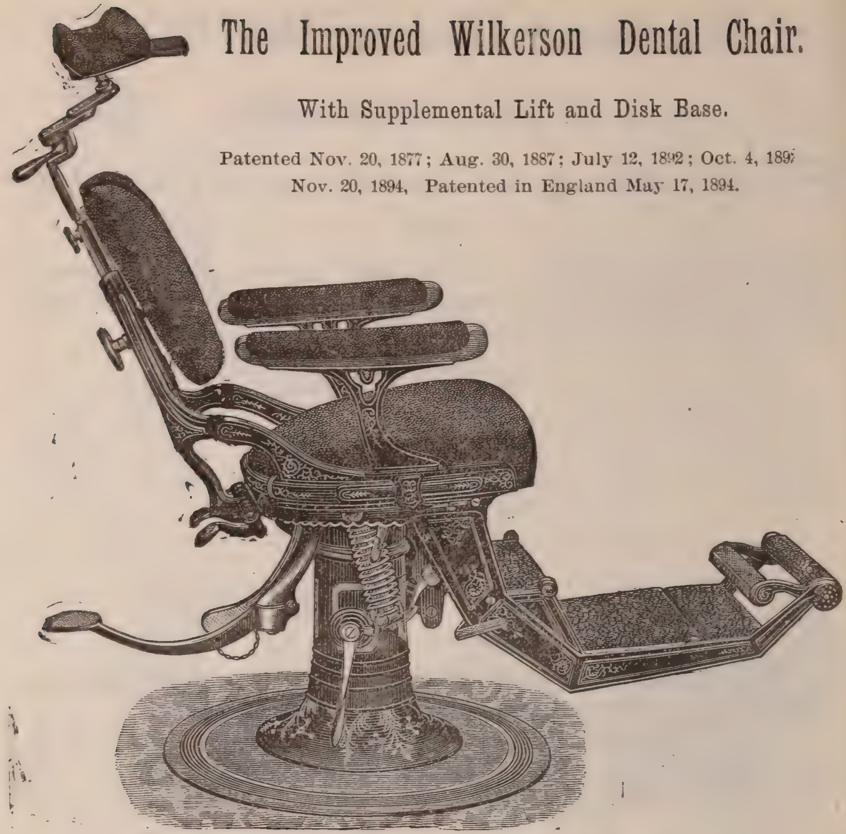
Nov. 20, 1894, Patented in England May 17, 1894.



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Supplemental Lift for the Wilkerson Chair.

One of the most difficult problems in the production of a first-class dental chair has been to obtain the great range of vertical adjustment which is desirable to meet the needs of the dentist without incurring one or more objectionable complications, such as the cutting of the floor of the operating-room or the telescoping of the supports.

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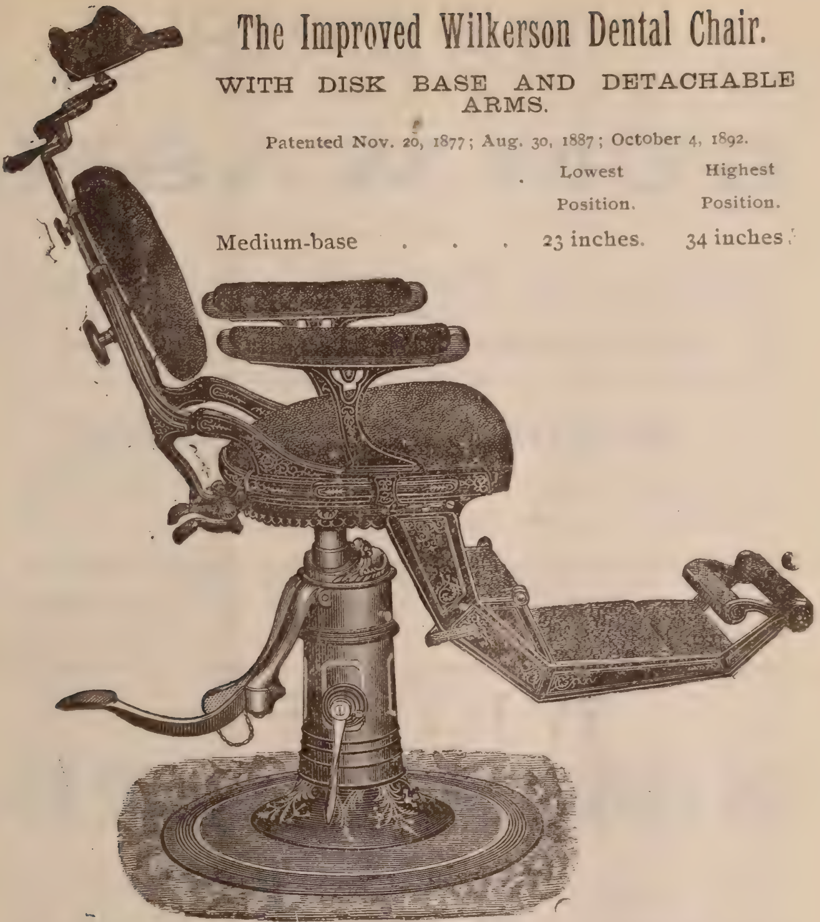

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Patented Nov. 20, 1877; Aug. 30, 1887; October 4, 1892.

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Medium-base . . .	23 inches.	34 inches.

To accommodate those who prefer the Disk Base we have added to our line of dental Chairs the Wilkerson in this style, as shown in the cut, and we are now ready to furnish the *medium range* Chair on the Disk Base.

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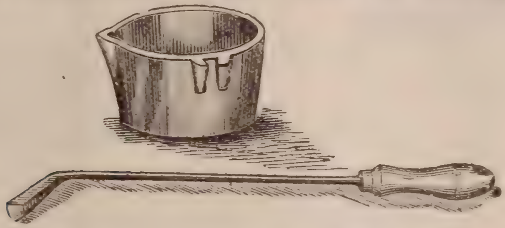

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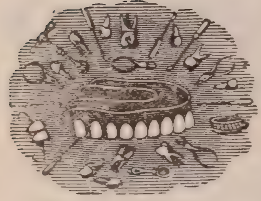

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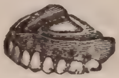

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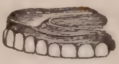

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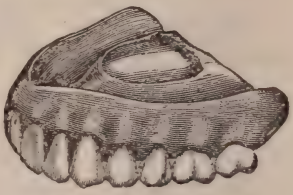

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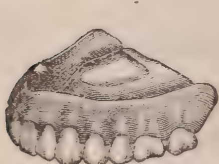

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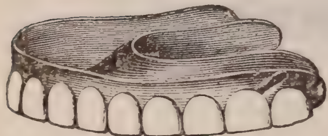

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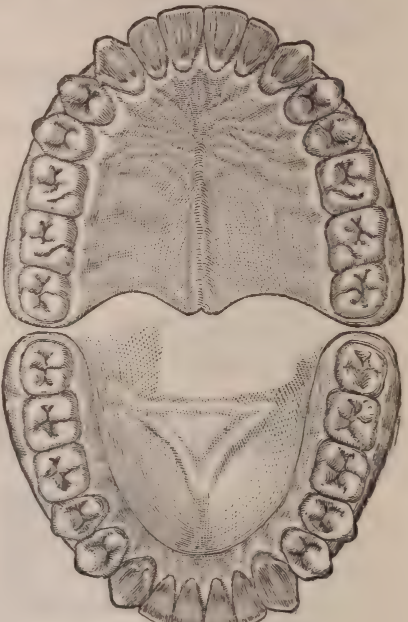

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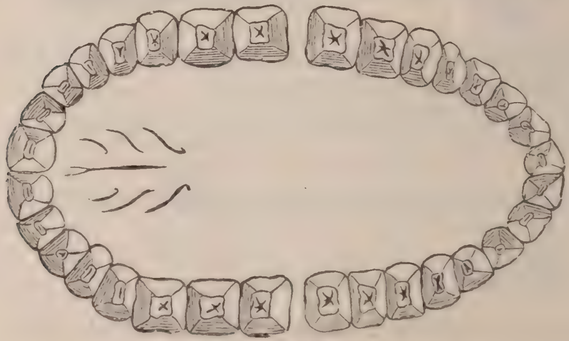

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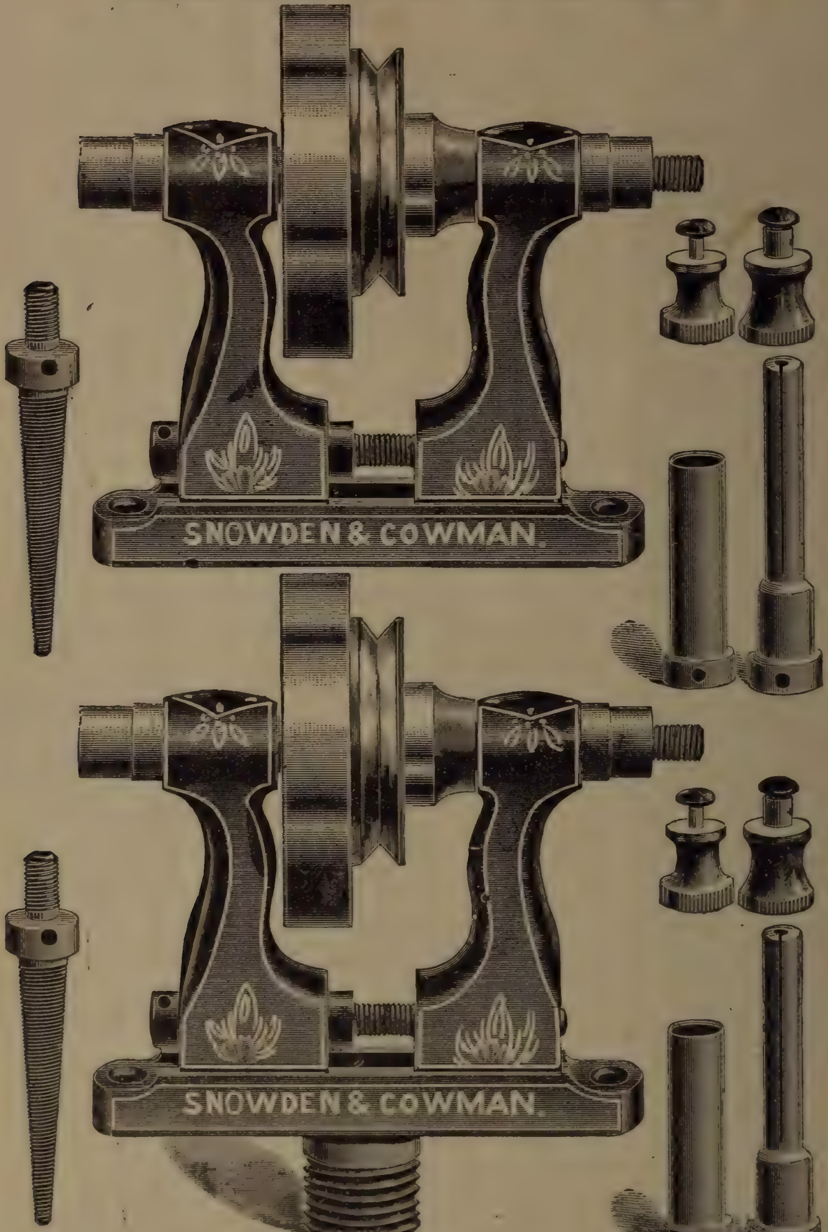
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OCTOBER, 1897.

THE AMERICAN JOURNAL OF DENTAL SCIENCE.

EDITED BY

F. J. S. GORGAS, M. D., D. D. S.
RICHARD GRADY, M. D., D. D. S.

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The exceedingly large number of patients for the extraction of teeth affords ample facilities for practical experience to every student.

In addition to the facilities afforded by this institution for a thorough course of instruction in the theory and practice of dentistry, the clinics in the University Hospital enable the Dental equally with the Medical Students to become familiar with the diseases and operations of practical Surgery, excisions of jaw, partial or entire; tumors, cancerous or benign, of various parts of the buccal cavity; plastic operations for the restoration of cheek, lips, etc., may be mentioned as having been before the class during the year. The induction of anæsthesia by means of different agents—ether, chloroform, bromide of ethyl, nitrous oxide gas, all being used in the clinics—cannot fail to be of use to the student of Oral Surgery. Junior as well as Senior students are afforded every opportunity for practical instruction in both operative and mechanical dentistry.

The Lecture Halls in the University Buildings are large and well lighted; and every facility will be afforded for practical and theoretical dental instruction. Demonstrations in Anatomy, Physiology and Pathology, (for which an abundance of material is furnished **free of charge,**) also form an important part of the regular course. The Dissecting Room is large, well ventilated and lighted, and the Demonstrator of Practical Anatomy passes much of his time in assisting the students and directing their labors. **Dissecting Material is furnished in abundance, free of charge.**

Qualifications for Graduation: The candidate must have attended two full courses of lectures of five months each in different years at the **Regular** or **Winter** Sessions in this institution. The following, however, will be considered as an equivalent to an attendance on one course of lectures in this College:—One course in any reputable Dental College; graduation in a reputable Medical College with one year of dental pupilage in a dental infirmary. The student meeting either of the above requirements will have the privilege of presenting himself as a candidate for graduation at the end of but one Course of Lectures. The matriculant must have a good English education; a diploma from a reputable literary institution, or other evidence of literary qualifications will be received instead of a preliminary examination. All students, both juniors and seniors, have equal advantages in operative and mechanical dentistry in this institution throughout every session.

Graduation in Medicine: Graduates of the Dental Department of the University of Maryland are required to attend but **one session** at the University School of Medicine prior to presenting themselves as candidates for the degree of "Doctor of Medicine." (See Catalogue.)

The **Regular or Winter Session** will begin on the 1st day of October, and will terminate in March of each year.

The **Summer Session**, for practical instruction, will commence in March, and continues until the regular Session begins. Students in attendance on the Summer Session will have the advantages of all the daily Surgical and Medical Clinics of the University.

The Fees for the Regular Session are $100, Demonstrators' Fees included; Matriculation Fee, $5; Diploma Fee, for candidates for graduation, $30; Dissecting Ticket, $10.

For Summer Session, no charge to those who attend the following Winter Session.

Beneficiary.—A Beneficiary student will be received from each State, on the recommendation of the State Dental Society, on the payment of half of the tuition fees. Board can be obtained at from $3.50 to $5 per week, according to quality.

The University Prize and a number of other Prizes will be specified in the annual Catalogue.

Students desiring information and the annual Catalogue will be careful to give full address and direct their letters to

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Dean of the Dental Department of the University of Maryland.
845 N. EUTAW STREET, BALTIMORE, MD

Baltimore College of Dental Surgery.

DENTAL INFIRMARY
BALTIMORE COLLEGE OF DENTAL SURGERY
6

This Institution was chartered in 1839 by an Act of the General Assembly of Maryland, and is the oldest and most widely known Dental College in the world. The majority of the eminent practitioners of dentistry in this country and Europe are graduates of the Baltimore College. The College Building is one of the largest and finest structures of the kind in this country, and the collection of specimens in the Museum cannot be excelled. The number of patients daily visiting the Infirmary has been so great that the Faculty have been compelled to add additional space and chairs to the already large and well-arranged Operating Hall. All such patients are operated on by the students, under the careful supervision of the Professors and Demonstrators.

The Annual Course of Instructions will commence on October 1st each year, and continue until the beginning of March following. The first weeks of the Session are devoted to Lectures on practical subjects especially the "Filling of Teeth," and Construction of Artificial Teeth, Clinics, Infirmary Practice and Demonstrations

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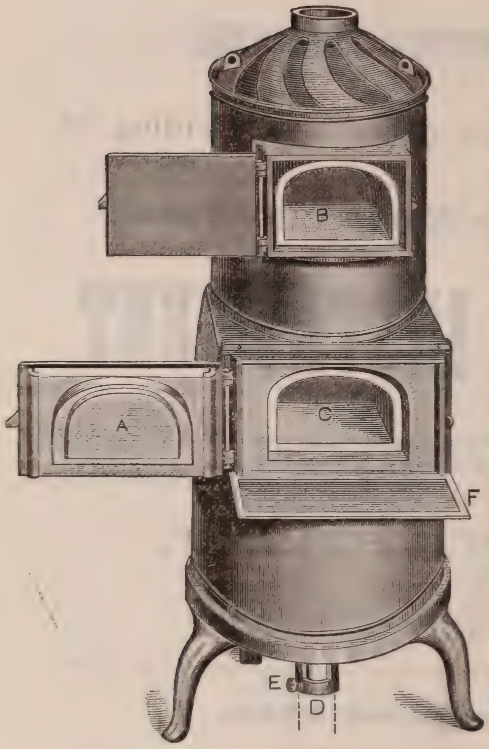

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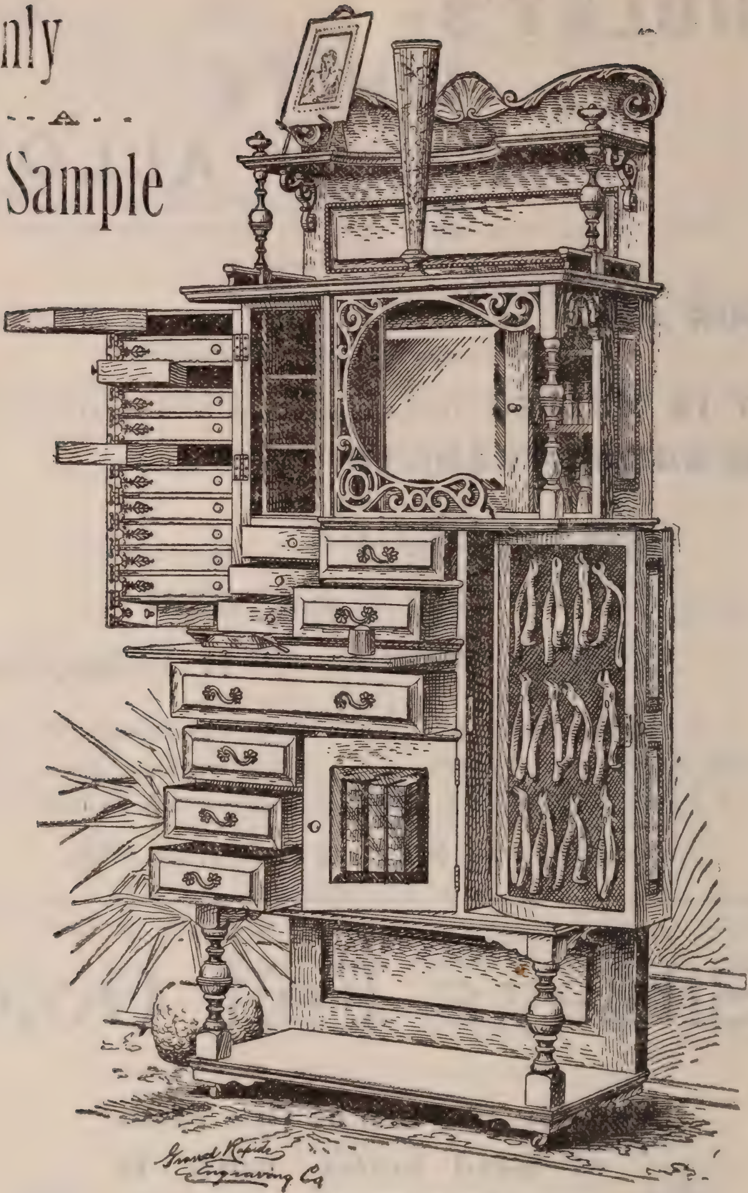

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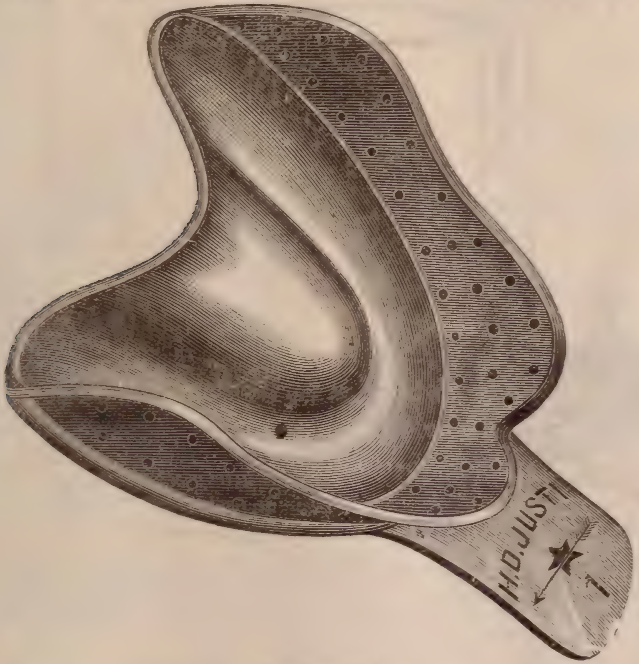

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WHILE plaster impressions are acknowledged to be the only reliable ones, every dentist has found a serious difficulty in obtaining them, owing to the tendency of the plaster on the outside the maxillary ridge to break away when the impression is withdrawn from the mouth. This usually breaks into small pieces, always difficult and often impossible to replace. From this cause sometimes several impressions have to be taken before one sufficiently perfect for use can be obtained.

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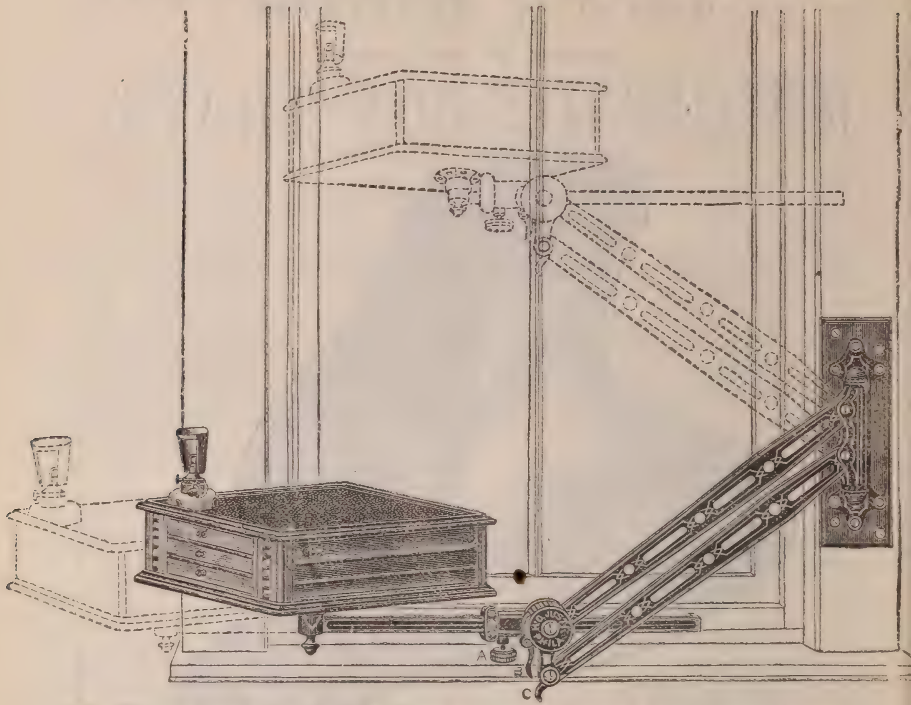

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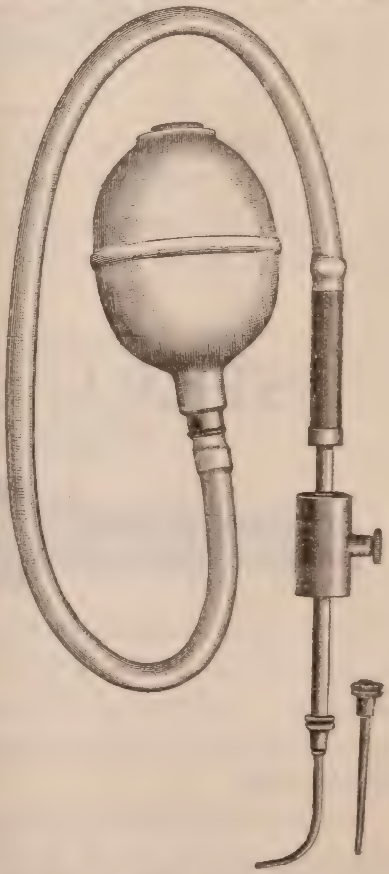
2. Clean out pulp chamber and expose openings of nerve canals; then introduce one of the points in opening of canal, and force the gas generated in the vaporizer into the canal until the root is saturated with the gas. Clean out canals thoroughly when possible, then treat again and fill immediately, if there is no indication of pus coming through the end of roots.

3. If there is a blind abscess in the tooth, stop up lightly with cotton and have patient return on third day. Three treatments will generally cure any case of blind abscess.

4. If there is a fistulous opening, try and force gas through same. One application is often all the case will require.



Open screw top on vaporizer and place small quantity of the iodoform (which accompanies each instrument) in chamber; then heat sufficiently, not too hot, to cause a thin stream of vapor to issue, on pressure of bulb, from point of vaporizer needle. Then insert in canal and force gas into same.

This gas will penetrate to every point in the canal and will absolutely destroy every vestige of animal life.

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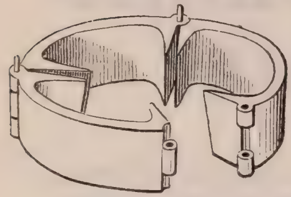

Fig. 2.

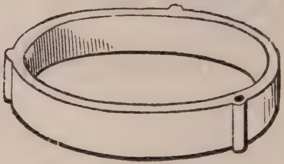

Fig. 3.

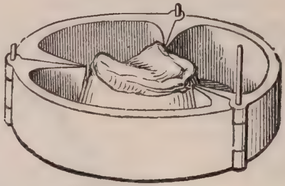

Fig. 1 represents the lower section of the Flask, slightly opened, to show the Joints. Fig. 2 is the upper section. When ready for use, the lower section is closed and confined by a Pin, and the Plaster Model placed in it, as represented in Fig, 3.

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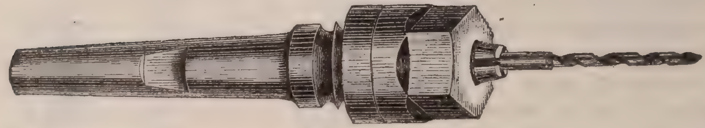

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It carries Drills, Burs, or Corundum Points of the Dental Engine, one-eighth of an inch in diameter, and under, and made to fit our Amateur, United States Short Spindle American Short Spindle, and Hand and Foot Lathes.

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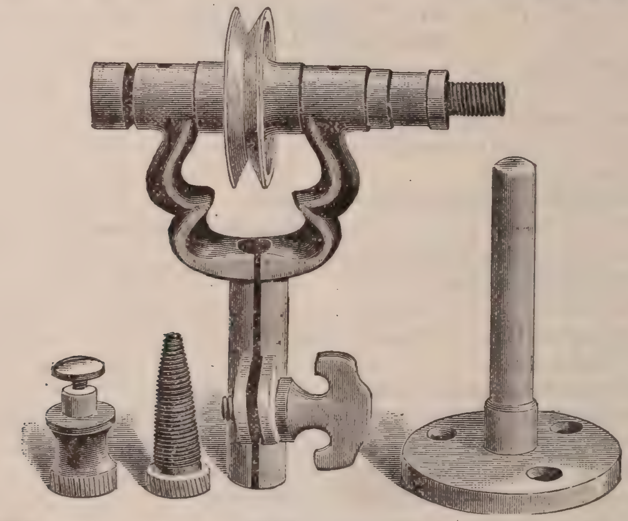
9 West Fayette Street, Baltimore, Md.

ENGINE LATHE HEAD FOR BRIDGE AND CROWN WORKERS.



THIS LATHE HEAD CAN BE ATTACHED TO SHAW ENGINE BY SLIPPING SOCKET OVER STANDARD AND TIGHTENING THUMB SCREW. IT IS VERY LIGHT AND NEATLY NICKEL PLATED. IT RUNS VERY SMOOTHLY AND LIGHTLY. IT ALSO CAN BE MOUNTED ON TABLE AS SHOWN IN CUT BY THE SMALL ATTACHMENT. . . . .

PRICE COMPLETE . . $4.00.

VULCANIZERS

Our Own Manufacture.

* * *

WE ARE MAKING 3 STYLES.

* * *

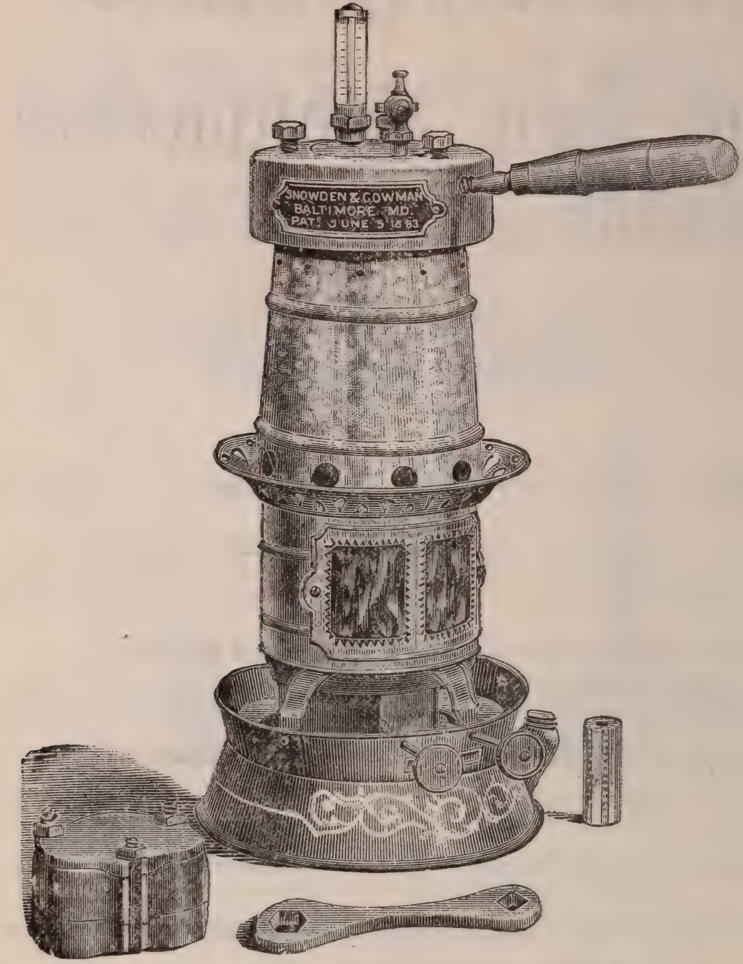
Complete with Coolidge's Gas and Time Regulator,	$25 00
Complete with Gage and Blow-off Cock for Gas or Kerosene,	21 00
Complete with Thermometer and Blow-off Cock for Kerosene or Gas,	18 00
Vulcanizers complete with Two Brass Flasks, instead of Iron Flasks, adds	1 50
Vulcanizers complete without Two Iron Flasks, deduct	1 50
Vulcanizers complete, less Kerosene Stove, deduct	1 70
Vulcanizers complete, less Gas Stove, deduct	1 00
Large Iron Flasks, each	1 00
Large Brass Flasks, each	1 50

SNOWDEN & COWMAN MFG. CO.

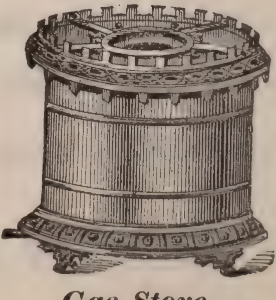
9 W. Fayette Street, BALTIMORE, MD.

SNOWDEN & COWMAN MFG. CO.'S

New Patent Vulcanizer.



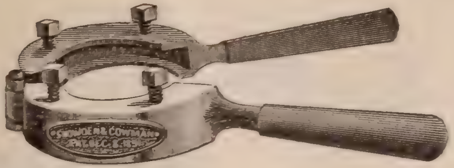
Complete for Kerosene or Gas, with Two Large Malleable Iron Flasks, *$18.00*

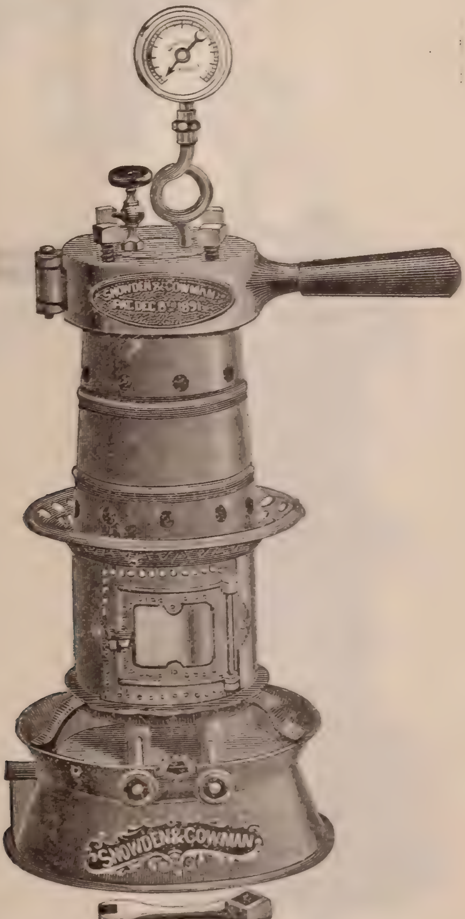


Gas Stove.

PATENTED DEC. 8, 1891.

Snowden & Cowman Mfg. Co.'s Hinged Clamp Vulcanizer.

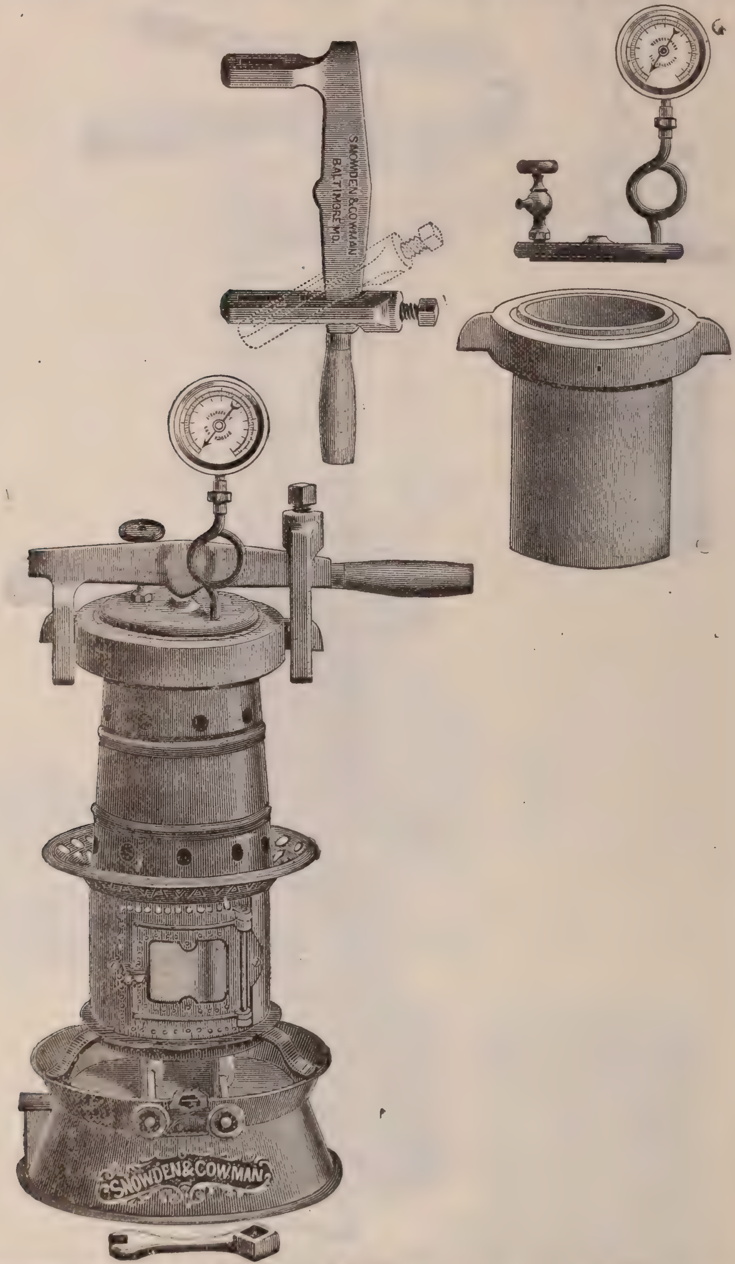




Price complete with 2 Flasks Improved for Gas or Kerosene with Guage as represented, ...	***$21.00***
With Thermometer and without Guage, ...	***18.00***

CIRCULARS ON APPLICATION.

Snowden & Cowman Mfg. Co.'s Improved Cross-Bar Vulcanizer



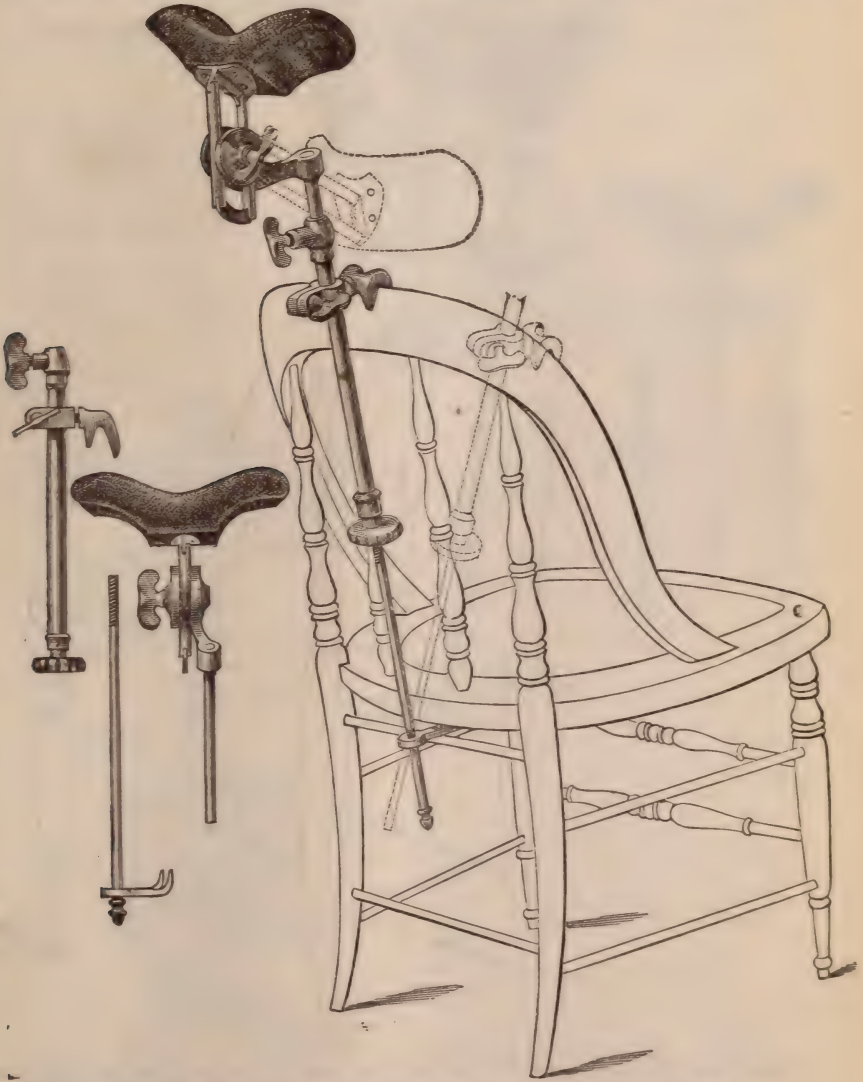
Price complete with two Flasks for Gas or Kerosene, with Guage as represented,	$21.00
With Thermometer and without Guage,	18.00.

CIRCULARS ON APPLICATION.

Snowden & Cowman Mfg. Co.'s

—NEW—

Portable Head-Rest,



PRICE, Full Nickel Plated, - - $10.00

—MANUFACTURED AND FOR SALE BY—

SNOWDEN & COWMAN MFG. CO.

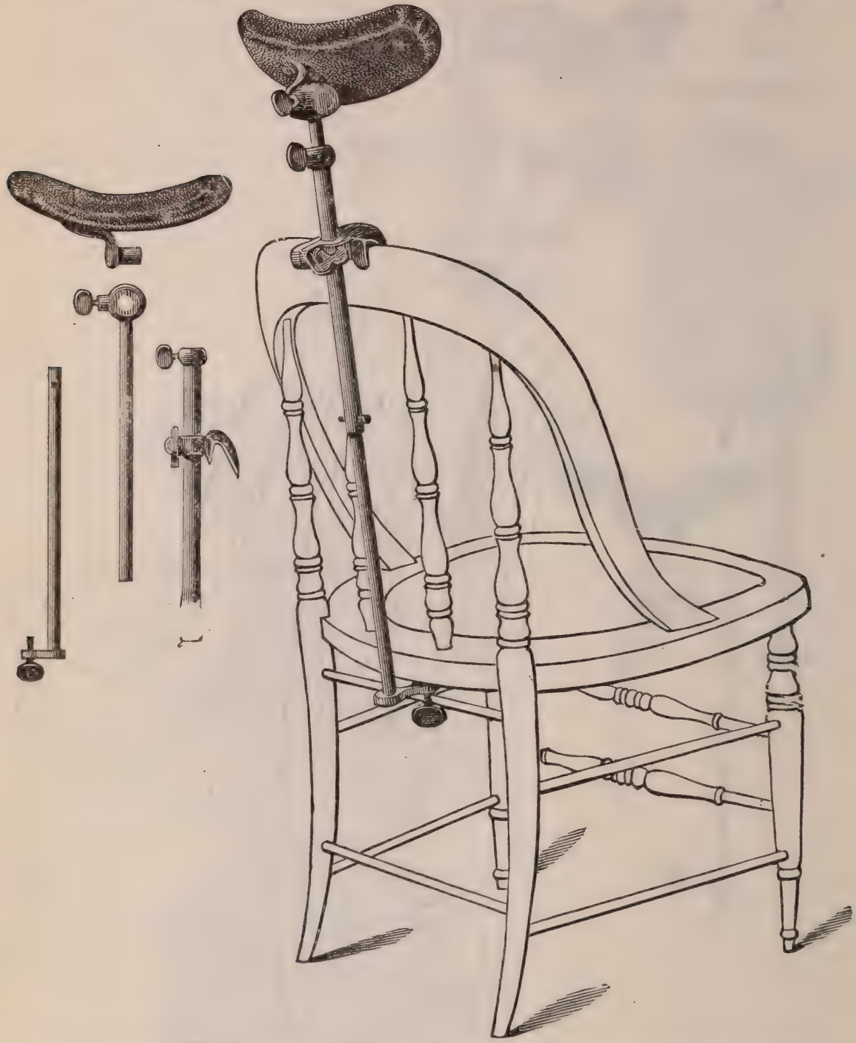
2 9 West Fayette Street Baltimore Md.

Price Reduced!

SNOWDEN & COWMAN MFG. CO.'S

IMPROVED–

Portable Head-Rest.

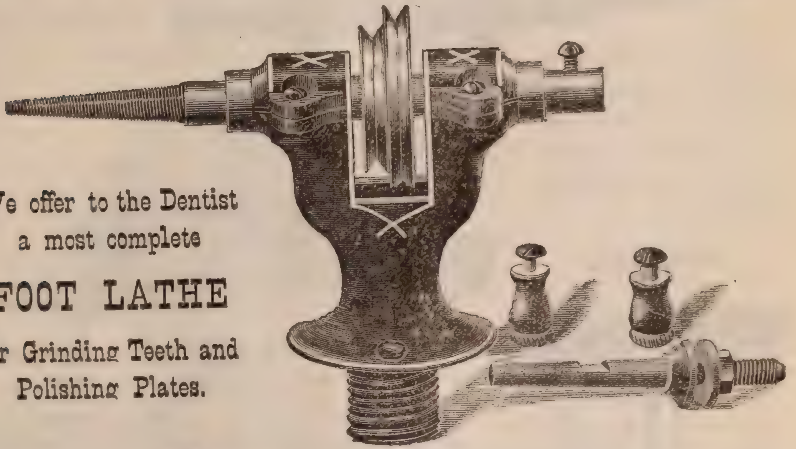


This Head-Rest can be attached to any chair, is very firm, and can be raised, lowered or moved backward or forward without interfering with attachment to the chair. Handsomely painted and bright parts nickel-plated.

It weighs only 4 lbs., and occupies a space only of 13 x 4 inches. PRICE, $4 50.

Price Reduced.

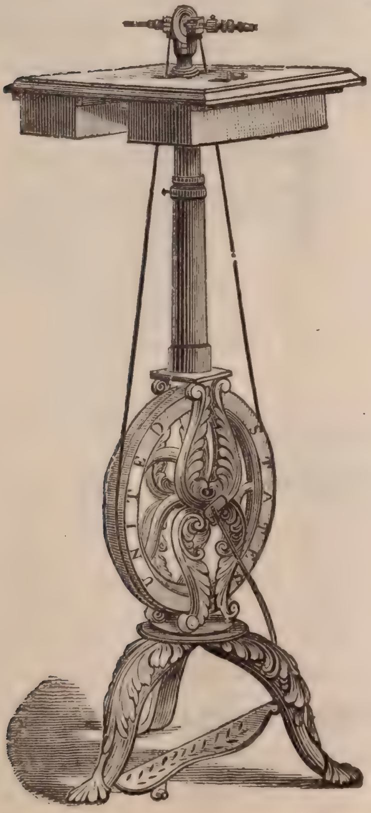
UNITED STATES LATHE.



We offer to the Dentist
a most complete

FOOT LATHE

for Grinding Teeth and
Polishing Plates.



It has been gotten up in a superior manner, great care having taken to make it durable and efficient. It has a movable column and table, which is capable of being elevated eight inches, to accommodate the operator in either a sitting or standing posture.

It can be packed in a box sixteen inches square, and can be set up in a few minutes, presenting a very neat and pleasing appearance, suitable for the office or laboratory. It is finished in bronze, and runs very light and steady.

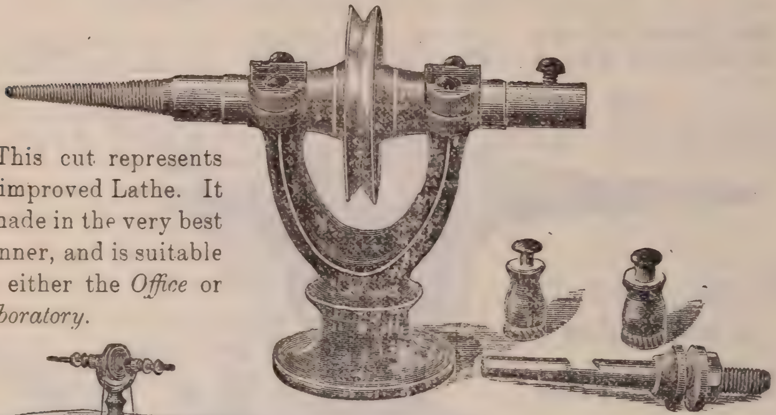
Price of Lathe complete with Short Spindle, as per cut,	$15.00
Price of Lathe complete with Long Spindle,	15.00
Price of Stand only, including Cord and and Coupling,	11.00

Snowden & Cowman Mfg. Co.,

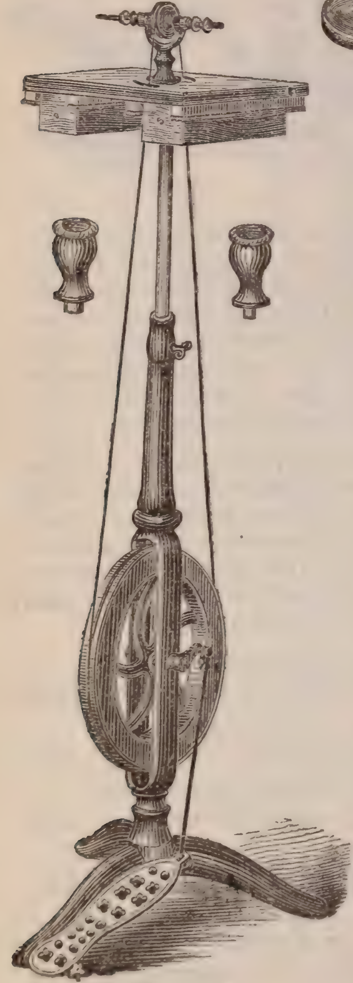
9 W. Fayette Street,

BALTIMORE, MD

AMERICAN LATHE, PRICE REDUCED.



This cut represents an improved Lathe. It is made in the very best manner, and is suitable for either the *Office* or *Laboratory*.



It has a solid spindle, one end of which is a taper screw for brush or felt wheels, and also, a space for a large corundum wheel. The other side of the spindle has a space for a large corundum wheel and a screw to receive the chucks, on which very small corundum wheels can be placed.

It has a movable column and table, which is capable of being elevated ELEVEN inches, to accommodate the operator in either a sitting or standing posture.

Either end of the spindle can be thrown towards the operator, if more convenient, by the set screw at the top of the column.

We also make for this Lathe a Socket Spindle—similar to our U. S. Lathe Short Spindle.

Price of Lathe, as per cut, with two Chucks, - - - -	$14.00
Price of Lathe, with Socket Spindle, with two Chucks, - -	14.00
Price of Lathe, with Extra Large Driving Wheel, - - -	15.00
Chucks, extra, - - - - -	.15

☞ No charge for Boxing.

SNOWDEN & COWMAN MFG. CO.,

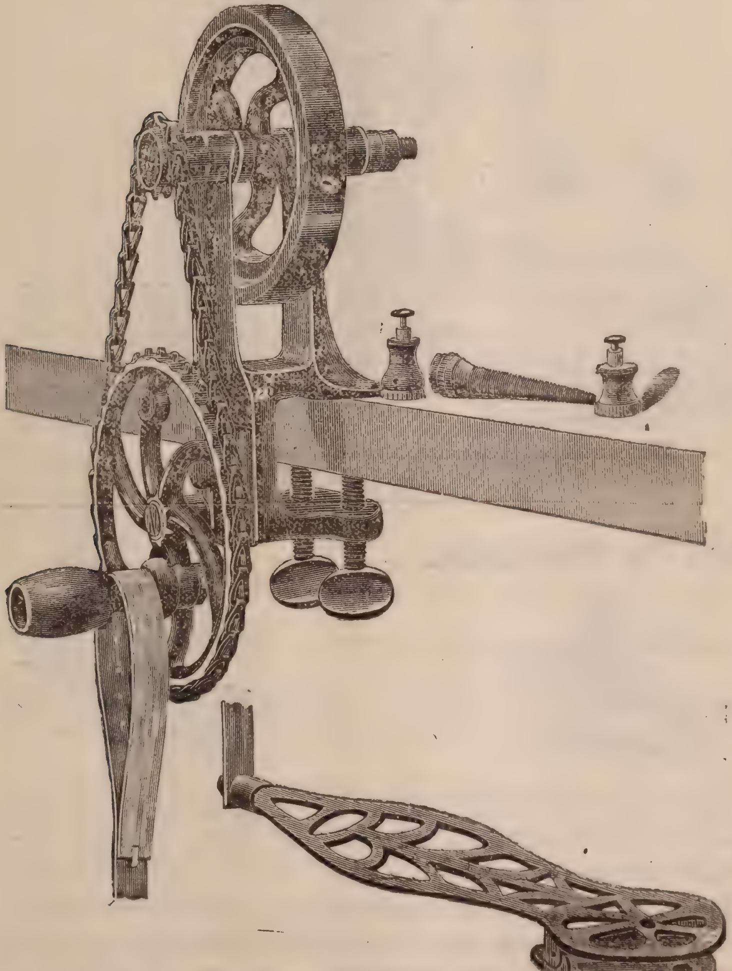
9 W. Fayette Street, Baltimore

SOMETHING NEW FOR TRAVELLING DENTISTS.

LINK CHAIN LATHE,

TO BE USED EITHER BY HAND OR FOOT POWER.

PRICE, - $7.00.



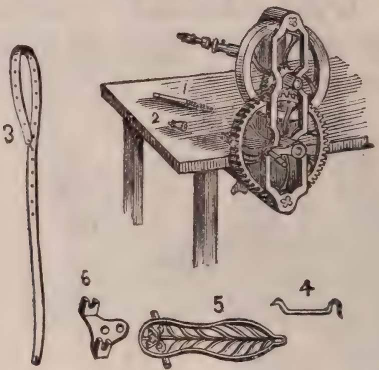
The Fly Wheel with Spindle is driven with an Endless Chain and makes very little noise, as it is propelled by large and small Sprocket Wheels, this gives it a very steady movement and does not require as much power as a geared lathe. It is fastened to table or bench by two Thumb Screws which make it impossible to turn when both are screwed up. It is very light and can be carried in a small satchell.

Snowden & Cowman Mfg. Co.,

9 W. Fayette Street, BALTIMORE, MD.

PRICE REDUCED.

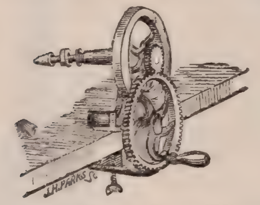
Portable Hand or Foot Lathe.



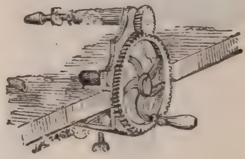
The above is a cut of a PORTABLE HAND OR FOOT LATHE, which is very efficient, manufactured for the traveling dentist; weighs under 7 pounds, and occupies the space of 6 by 9 inches. Members of the profession who have seen it pronounce it first rate.

Price, complete, - - - - - -	$5 50
Without Foot Attachment, - - -	5 00

Hand Fly Wheel Lathe.



Hand Lathe.



HAND FLY WHEEL LATHE.—It is intermediate between the Hand Lathe, and the Hand and Foot Lathe; it weighs only three pounds and is a first rate Lathe. - - PRICE, $4 50

HAND LATHE.---It is small, strong and durable, and weighs only two and a quarter pounds; we have sold a large number of these Lathes,—giving great satisfaction. - - PRICE $4 00

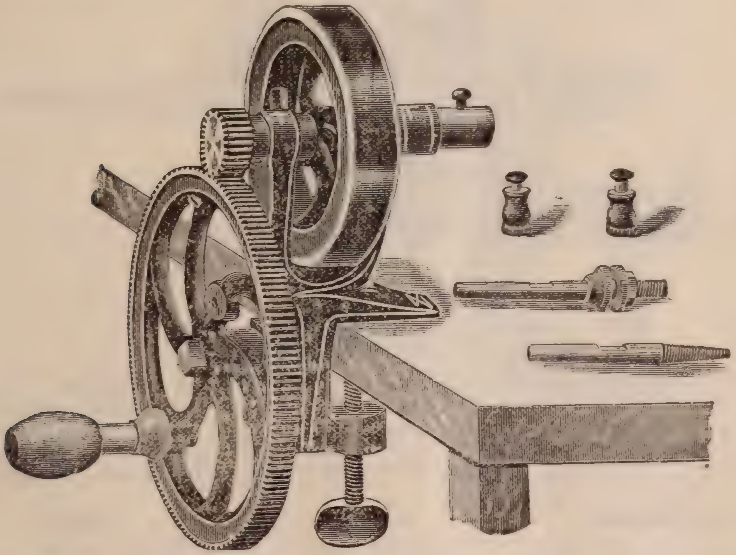
☞ All of the cog wheels of our Lathes are turned and cut on a machine, and are uniform, which makes them run true and with little noise.

SNOWDEN & COWMAN MF'G CO.,

No. 9 West Fayette St., Baltimore.

NEW HAND FLY WHEEL LATHE.

This Lathe is made larger and heavier and can be used with foot. It runs very steady and makes a good lathe for either Office Laboratory or to carry around. It is very neat.



PRICE, - - - -	$5 00
" with Foot Attachment and Strap,	5 50.

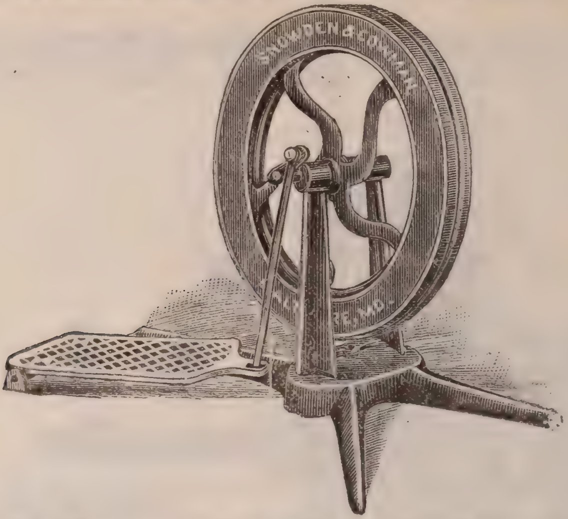
'The proof of the pudding is in the eating."

If the experience of dentists generally did not prove OUR GOLD AND PLATINA ALLOY a superior filling they would not be willing to pay nearly double more for it than the price of common amalgams. I suppose there is not another alloy or amalgam so generally used by our better class of dentists.

Welch's Alloy, 1 oz. $3.00; 2 oz. $5.50, 4 oz. $10.00; 10 oz. $22.00.
Welch's Amalgam, 1 oz. $2.00; 2 oz. $3.50; 4 oz. $7.00; 10 oz. $15.00.
Welch's Oxiphosphate, large $1.50; medium $1.00.
Liquids or powders, large 75 cts.; medium 50 cts.

T. B. WELCH, - - - - Vineland, N. J.

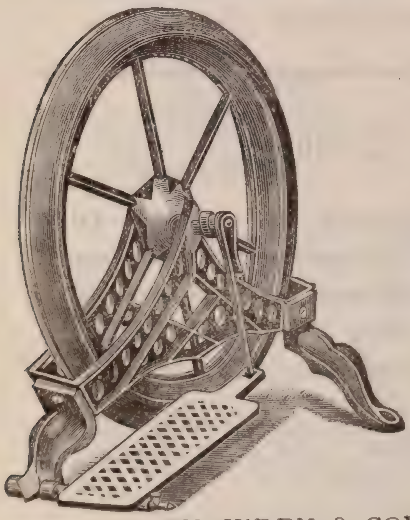
FLY WHEEL, No. 1, NEW.—Price Reduced.



This Fly Wheel weighs 30 lbs., with diameter of wheel 15 inches. The stand is the stiffest and steadiest of any driving wheel in the market. Owing to the position of the feet and the peculiar arrangement of the treadle, the wheel has an immense power and is very light running. In boxing remove pin that connects treadle with rod and fold treadle by side of the wheel. Weight complete, 46 lbs.

Price Boxed, - - - - - - - **$7.00**

DIAMOND FLY WHEEL.—Price Reduced.



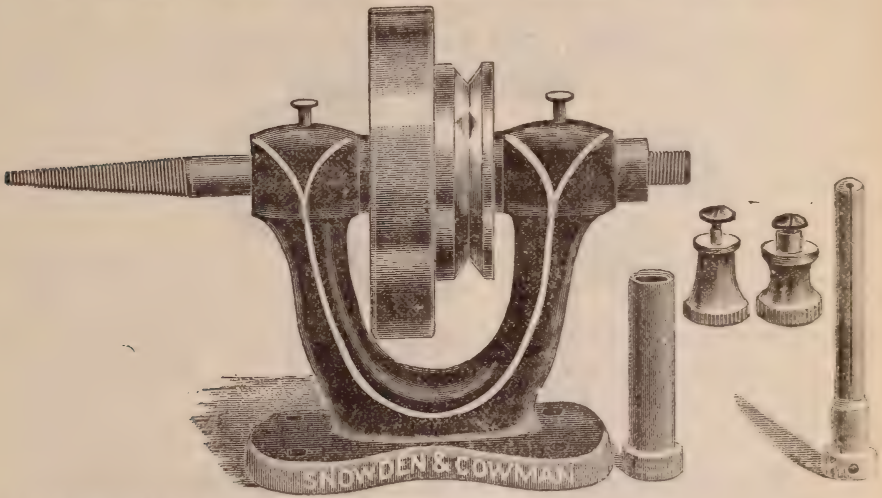
This fly-wheel is eighteen inches in diameter, with wrought iron spokes, in an iron frame, complete in itself, can be set any where, and runs very steady.

It has sufficient power and speed for any Dentist's Lathe Head. The feet are easily detatched, and all can be packed in a smaller box than any other Fly Wheel of its dimensions in the market.

Price Boxed, - - **$7.00.**

SNOWDEN & COWMAN MFG. CO.,
No. 9 W. Fayette Street,
Baltimore.

OUR NEW LATHE HEAD.



VERY SIMPLE AND EASY RUNNING.

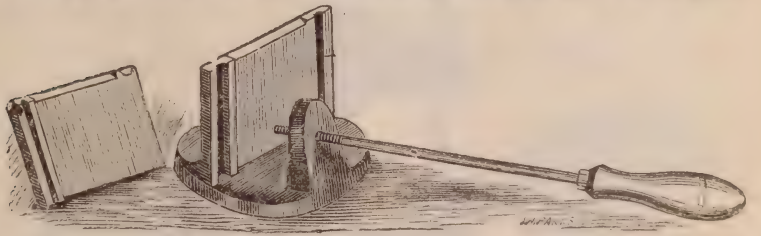
ADJUSTMENT QUICKLY MADE.

VERY DURABLE AND STEADY.

PRICE WITH 4 CHUCKS, - - -	$5.00.

SNOWDEN & COWMAN MFG. CO.'S

INGOT MOULDS.

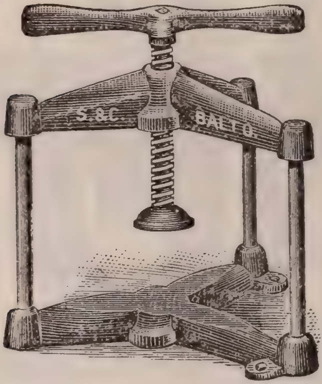


No. 1, will cast a plate from one half of an inch to two inches in width, also a round, half-round and square bar. -	$2.25
No. 2, will cast a plate from one half of an inch to two and three quarter inches in width, also a round, half-round and square bar. - - - - - -	$2.75
No. 3, will cast a plate 3 inches wide and 4 inches long also round, half-round and square bar, -	$3.25

LIBERAL DISCOUNT TO THE TRADE.

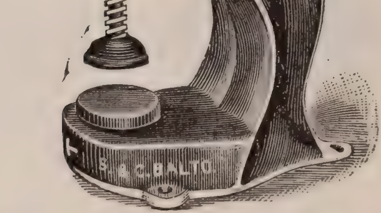
Flask Presses.

No. 1, Old Style Improved.



This Press is intended to close the flask after packing with rubber. It is of great advantage, saving screws and flasks. The upright rods are of wrought iron and the handle of the screw can be detached. They are *well made* and *very strong*, and has been made larger, so that it will take any Flask in the market. Price, - - - - $1.50.

No· 2, New Stvle.

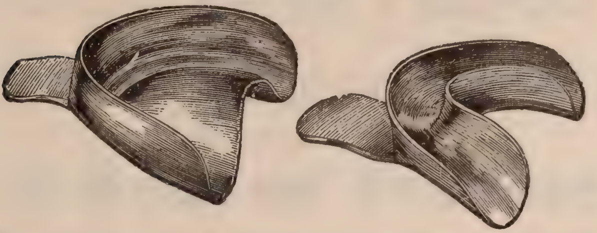


This Press is made of cast iron, very heavy, with steel screw and detachable handle. It has a Pivot Plate to level up the flask, insuring always a central pressure on the flask ; will take any flask in the market. Price - - $1.50

BRITANNIA IMPRESSION CUPS

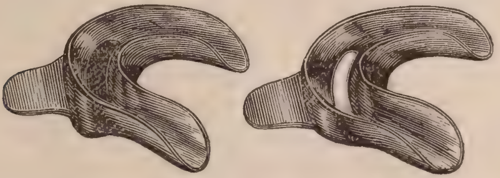
LONG HANDLES.

We Manufacture the following Sizes and Varieties:



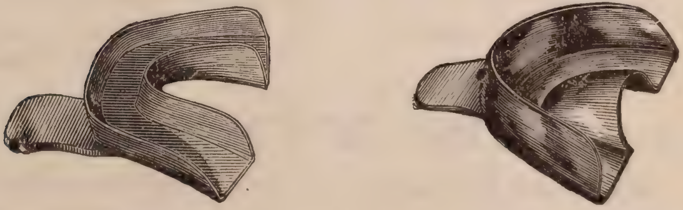
UPPER, Nos. 00, 0, 1, 2, 3, 4, 5, 6, 7.—(No. 00 is the largest size.)
LOWER, " 1, 2, 3, 4, 5. —(No 1 is the largest size.)

PARTIAL LOWER CUPS.



ENCLOSED CAVITY, Nos. 9, 10, 11.—(No. 9 is the largest size.)
OPEN CAVITY, Nos. 6, 7, 8. —(No. 6 is the largest size.)

UPPER AND LOWER CUPS.



PARTIAL UPPER—Flat Bottom, Nos. 8, 9, 10, 11—(No. 8 is the largest.)
FULL LOWER— " " " 12, 13, 14—(No. 12 is the largest.

PRICE..............................Each.....................25cts

SNOWDEN & COWMAN MFG. CO.
9 West Fayette Street, Baltimore Md

Dental Depot,

ESTABLISHED 1856.

SNOWDEN & COWMAN MFG. CO.

MANUFACTURERS OF

Lathes, Head Rests, Vulcanizers, Impression Cups, &c.

AND DEALERS IN

DENTISTS' MATERIALS,

No. 9 W. Fayette St., between Charles & Liberty Sts

BALTIMORE.

GOLD FOIL.

	Per 2 oz.	oz.	½ oz.	¼ oz.	⅛ oz.
Abbey & Sons,		$32.00	$16.00	$8.00	$4.
Valleau's		30.00	15.00	7.50	4.
Ney & Co's.		29.00	15.00	7.50	4.
S. S. White's, ¼ Century,	$58.00	30.00	15.00	8.00	4.
" " Globe,	58.00	30.00	15.00	8.00	4.
" " 1000 Fine,	58.00	30.00	15.00	8.00	4.
R. S. Williams, Cylinders, A,		30.00	15.00	8.00	4.00
" " " B,					
" " Rect. Pellets,					
" " Standard,					
Watt's Crystal,		32.00	16.00	8.00	4.00
E. Rowan & Co.		29.00	15.00	3.20 per 1-10 oz.	
" untrimmed,				5.60 per 1-5 oz.	
"				2.90 per 1-10 oz.	

TIN FOIL.

Ney & Co's--Nos. 4, 6, 8, and 10, - -	40 Cents per Book
S. S. White's, - - - - - - -	30 " " "
Nos. 4, 6, 8 & 10, (extra tough)	40 " " "

SNOWDEN & COWMAN MFG. CO.,

No. 9 West Fayette Street Baltimore

PORCELAIN TEETH.

GREATLY REDUCED.

We keep on hand a large assortment of Teeth of the following Manufacturers, which we

SELL AT THEIR REDUCED PRICES.

The S. S. White Dental Manf. Co.'s

	Each.	$10 lots.	$25 lots.	$50 lots.	$100 lots.	$300 lots.
Plain Rubber & Plate Teeth	.12	.11½	.11	.10	.09	.08
Gum Sectional Rubber, Plain Plate, long Pins, Single Gum Rubber and Gum Plate Teeth,	.12½	.12	.11½	.11	.10	.09

H. D. JUSTI & SON'S.

	Each.	$10 lots.	$25 lots.	$50 lots.	$100 lots.
Plain Rubber and Plate,	.10	.09½	.09	.08½	.08
Gum Sectional Rubber, Plain Plate, Single Gum Rubber and Gum Plate,	.10½	.10	.09½	.09	.08½

Sibley's or Wilmington Co.'s Gum or Plain Teeth.

Per Set 14 Gum or Plain, ...	$ 1 00
11 Sets, " " "	10 00
29 " " " "	25 00
60 " " " "	50 00
125 " " " "	100 00

Less than Set of Fourteen Eight Cents per Tooth.

SNOWDEN & COWMAN MFG. CO.

DENTAL DEPOT

No. 9 W. Fayette Street.

AMALGAMS.

Townsend's	$1.75	per ounce
Chicago Refining Co's	4.00	" "
Caulk's Par-Excellent Alloy,	2.50	" "
Caulk's White Alloy,	3.50	" "
Lawrence's	3.00	" "
Arrington's	2.00	" "
King's,	3.00	" "
Globe Alloy,	2.50	" "
Alba "	2.50	" "

CEMENTS.

Agate Cement, in 1 oz. Boxes,	$1.50
" " " ½ "	75
Weston's Insoluble Cement, one or two colors,	1.00
Dr. Flagg's Plastic Enamel, per Pk'g,	2.00
Fossiline, " "	2.00
Metcalf's Cement, " "	2.00
H D. Justis's Insoluble Cement,	
1 oz. Package, 1, 2, 3, 4 Colors,	3.00
½ " " any above "	1.50
H. D. Justis's Acme Cement,	
Per Box,	1.00
Dr. T. B. Welch, & Son, Art. Dentine, per Pk'ge	1.50
" C. N. Pierce Phos. Zinc, " "	2.00
" T. O. Oliver's Oxy Phos, " "	2.00
" Smith's " Chloride, " "	1.00
Houghtons's Os-Artificial, " "	75
Poulson's Mineral Plombe, " "	2.50
Dawsons's Mineral Cement " "	1.50
Caulks's Diamond "	
Per Package, 2 Colors,	1.25
" " 1 "	75
J. Ogden Britten's Cement, 2 colors,	1.50

DENTAL RUBBER.

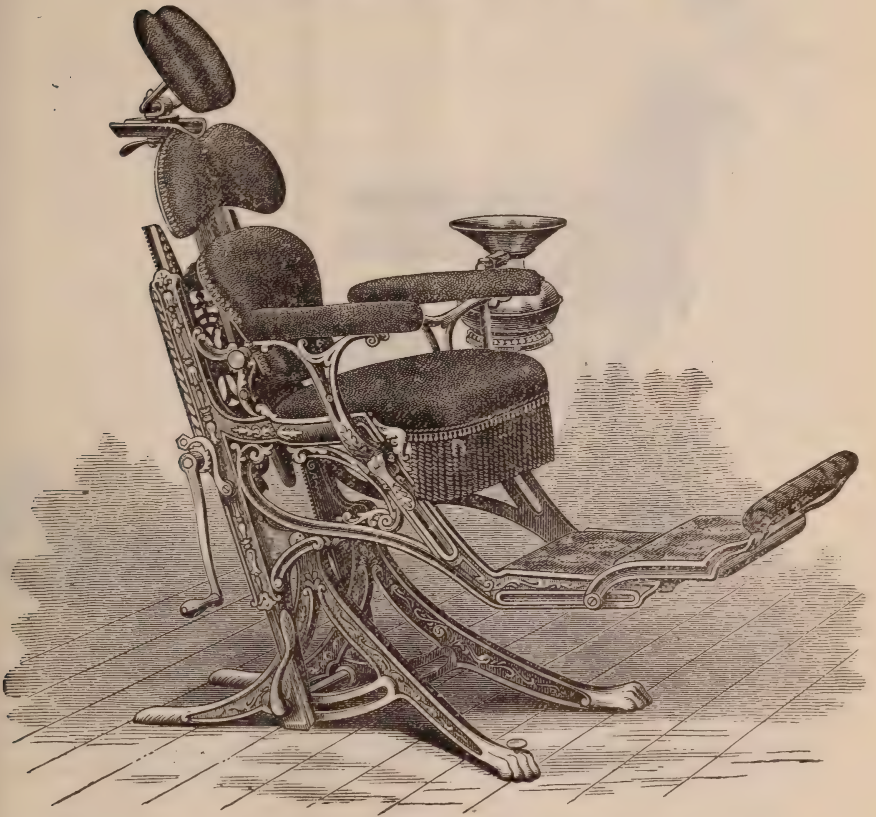
Ram's Horn Rubber,	per lb.	$2.25
" " " Pink	"	5.00
Sam'l S. Whites' No. 1 Improved,	"	2.25
Doherty No. 1,	"	2.25
" " 2,	"	2.25
Sam'l S. White's Bow Spring,	"	2.75
Black Rubber	"	2.50

GUTTA-PERCHA.

Ram's Horn,	per lb.,	$2 25
Sam'l S. White's	"	2.25

THE MORRISON DENTAL CHAIR.

Reissue May 15, 1877. English Patent Dec. 7, 1867.



PRICES.

In best quality Green or Garnet Plush or Plain Morocco . .	$100.00
In Real Morocco, Embossed	110.00
In finest quality Green or Garnet Plush, puffed and trimmed with Silk Plush, full Turkish Upholstery	120.00

The Illustration shows No. 4 Spittoon, No. 3 Bracket, No. 3 Socket, which are extra and add $8.00 to above price.

BOXING FREE.

STUDENT'S MORRISON CHAIR.

To meet an often-expressed want of a first-class chair at a low price, the Student's Morrison was brought out. It is, in all respects, equal to the regular Morrison chair, except that it is upholstered in a seal-brown corded material, instead of a plush. It presents a very neat appearance, and will wear nearly as well as plush.

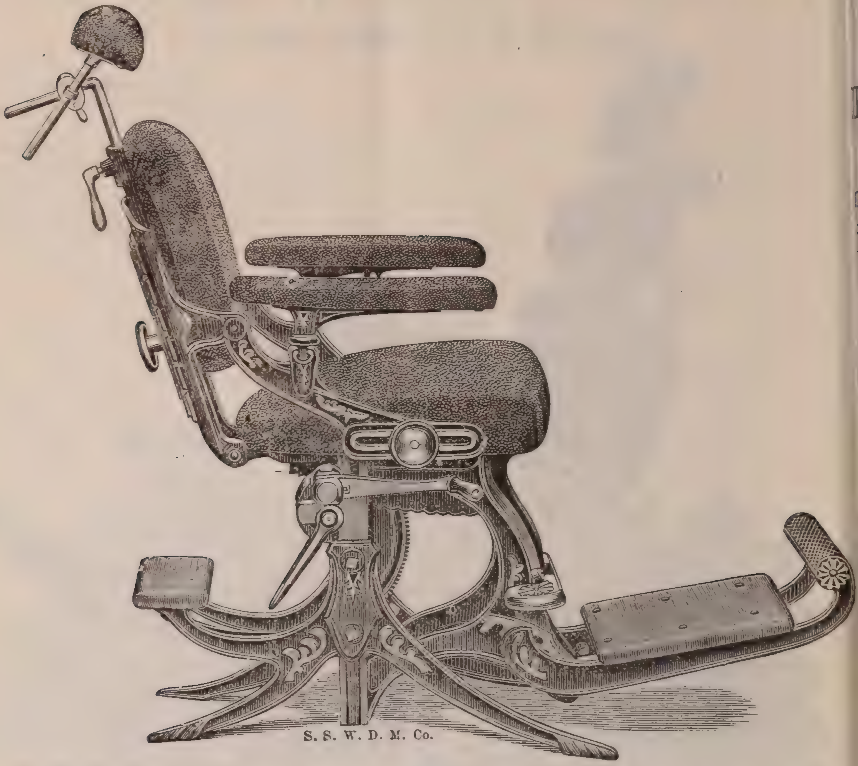
PRICE.

In Corded Upholstery.	$ 85.00

We supply either style of the Morrison Chair, with or without Casters When ordered with Casters, the price is $10.00 extra.

For Sale by Snowden & Cowman Mfg. Co., 9 W. Fayette St., Baltimore.

THE CYCLOID CHAIR



Patented December 28, 1875; July 3, 1877; November 20, 1877; March 9, 1880; May 22 1883. Re-issues July 4, 1876; March 19, 1878; August 27, 1878. Others pending.

This Chair was designed especially to meet a demand for a chair which, while affording a variety of essential movements, could be sold at a lower price than the Wilkerson, The S. S. White Pedal-lever, or the Morrison.

For those who want a low-priced chair which in facility of movements far surpasses anything heretofore offered for the money, the Cycloid is *the* chair. It is strongly built, and the finish and general appearance make it a desirable addition to a well-furnished office.

The lifting mechanism, which has a range of 10 inches, is entirely new and is worked with great ease and rapidity. Should the crank by accident slip from the hand the descend of the Chair is automatically arrested.

The arms are so arranged that they may be rotated out of the way of the operator and yet be of service to the patient.

The foot-board can be adjusted in four positions, and a permanent support for the foot of the operator is placed at the back of the base, the convenience of which will be obvious to those who are in the habit of using a "cricket."

Nearly all of the movements can be made with one hand while standing at the side of the Chair.

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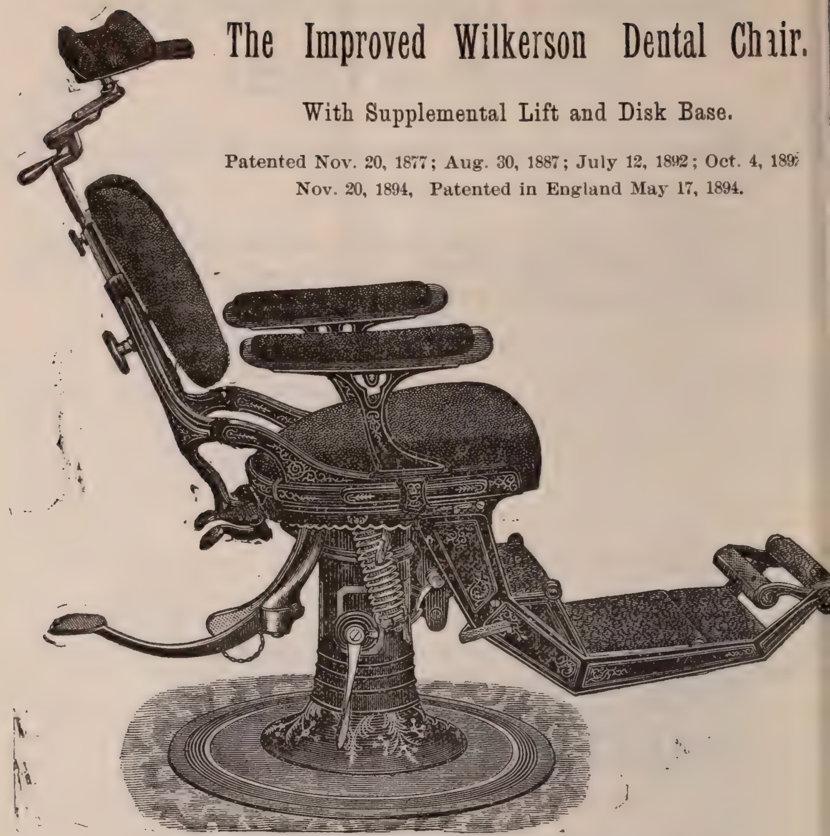

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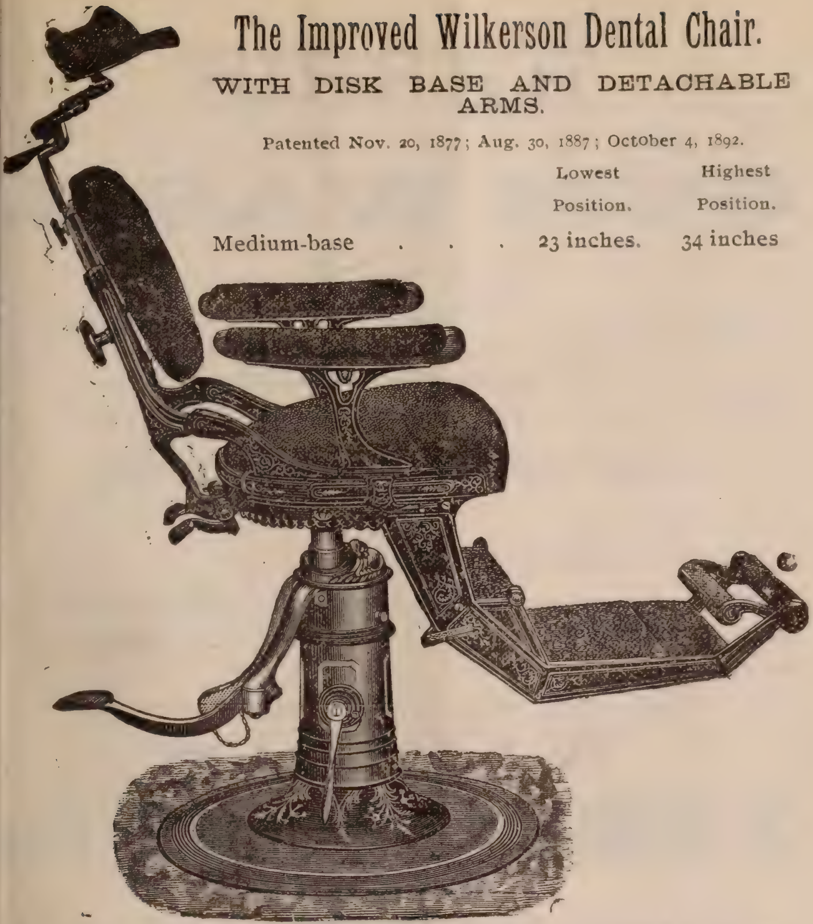

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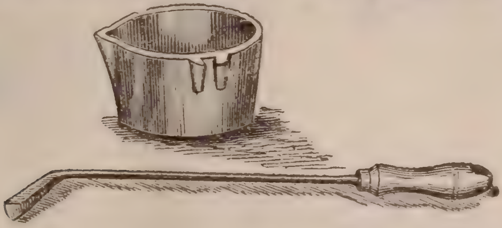

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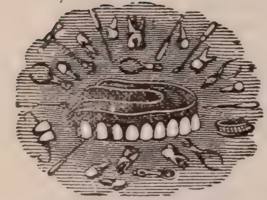

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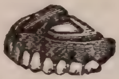

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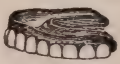

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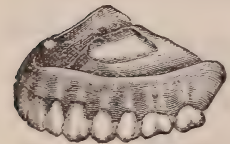

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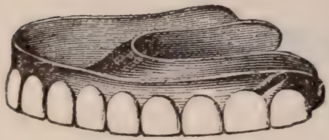

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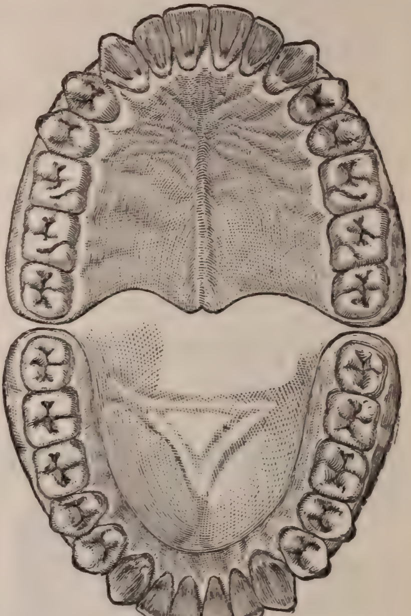

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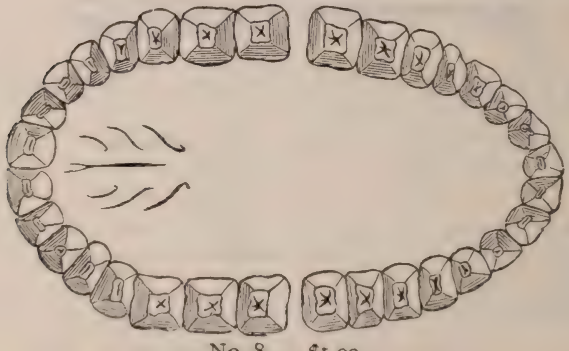

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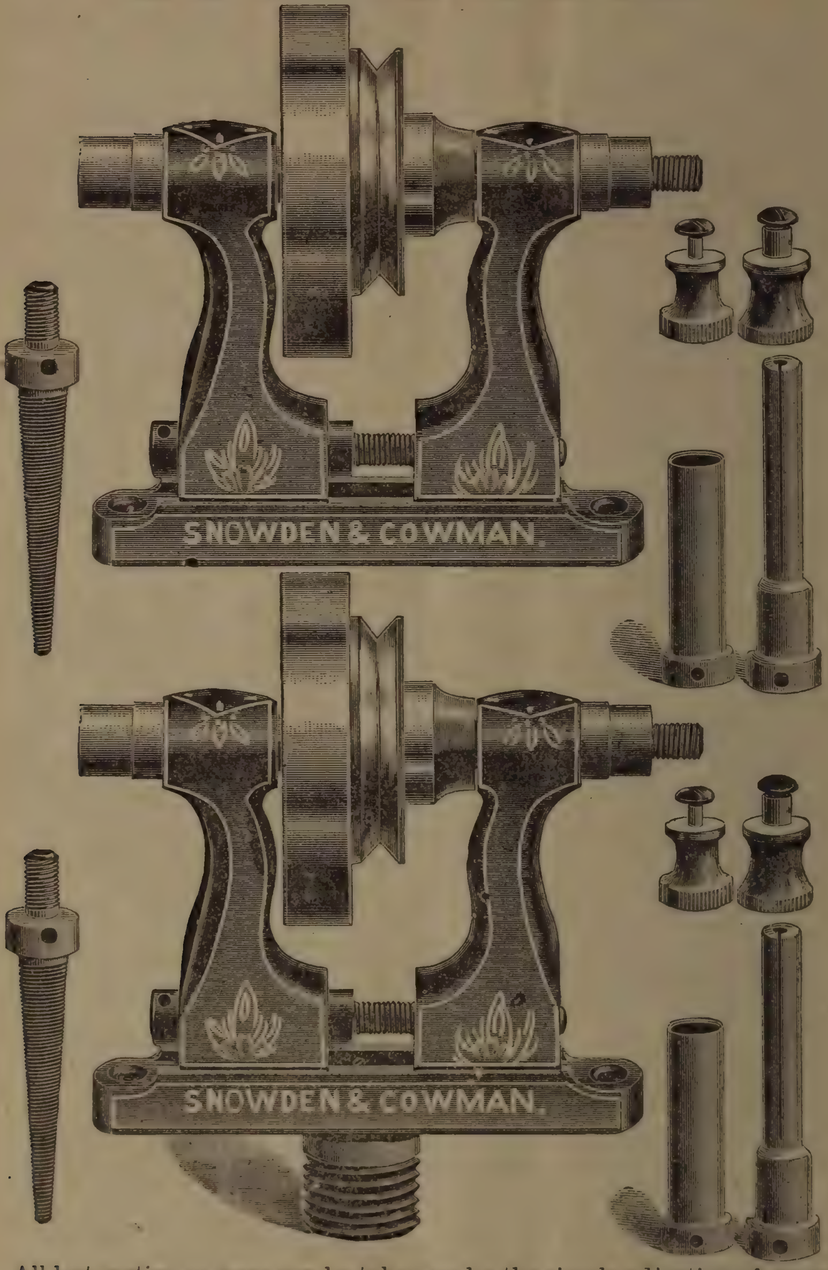
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RICHARD GRADY, M. D., D. D. S.

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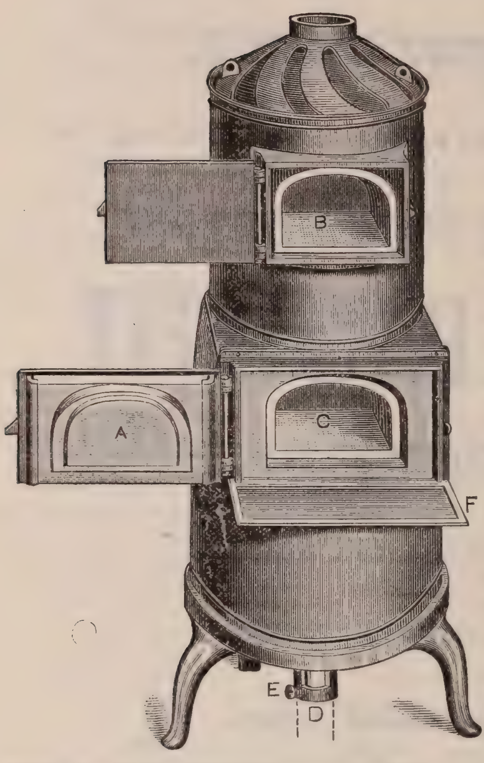

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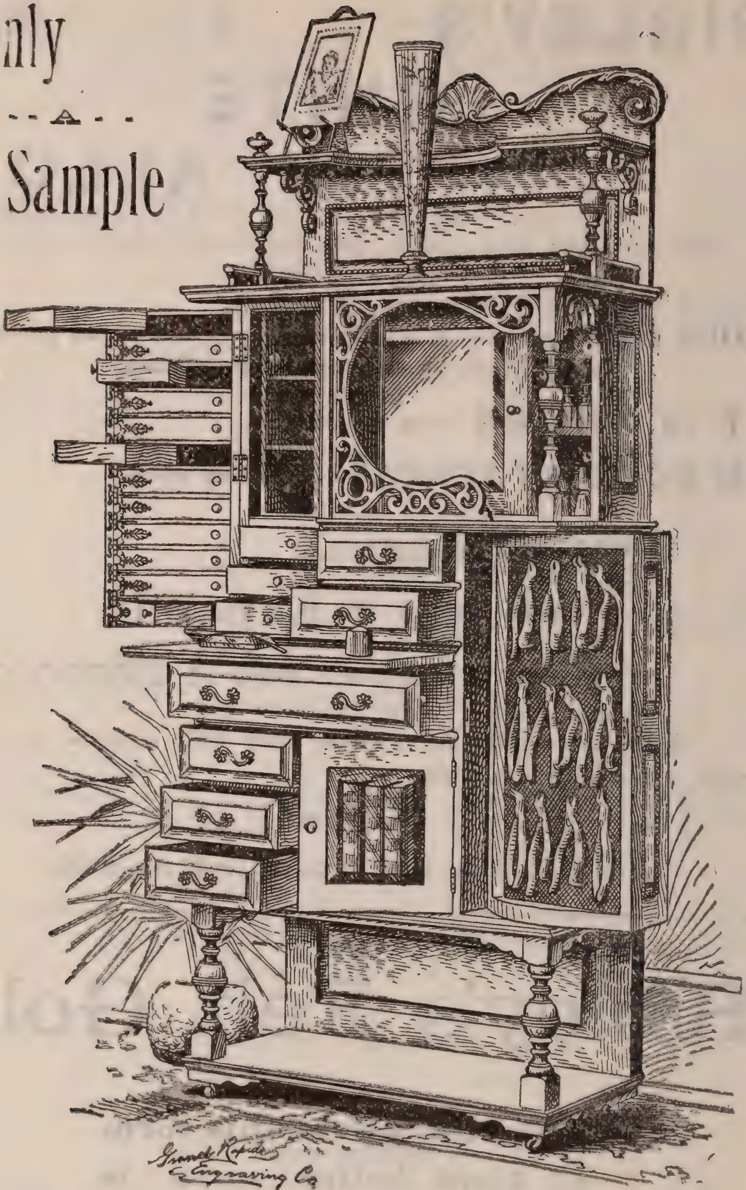

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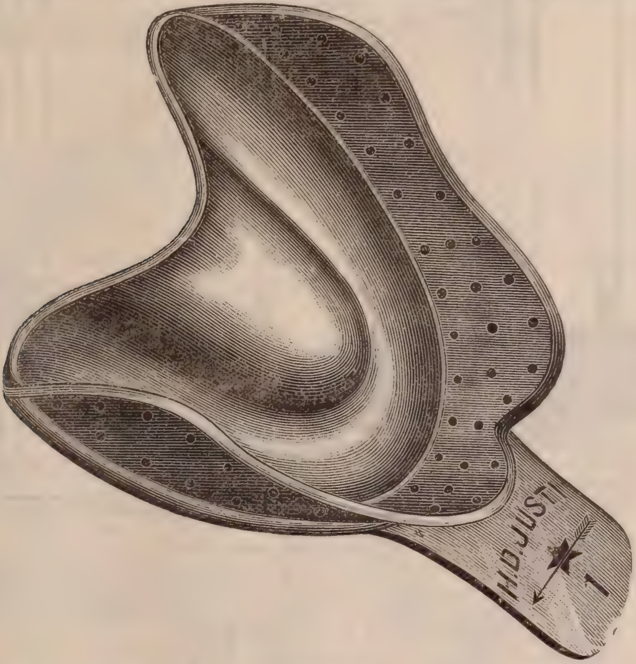

[PATENTED.]

WHILE plaster impressions are acknowledged to be the only reliable ones, every dentist has found a serious difficulty in obtaining them, owing to the tendency of the plaster on the outside the maxillary ridge to break away when the impression is withdrawn from the mouth. This usually breaks into small pieces, always difficult and often impossible to replace. From this cause sometimes several impressions have to be taken before one sufficiently perfect for use can be obtained.

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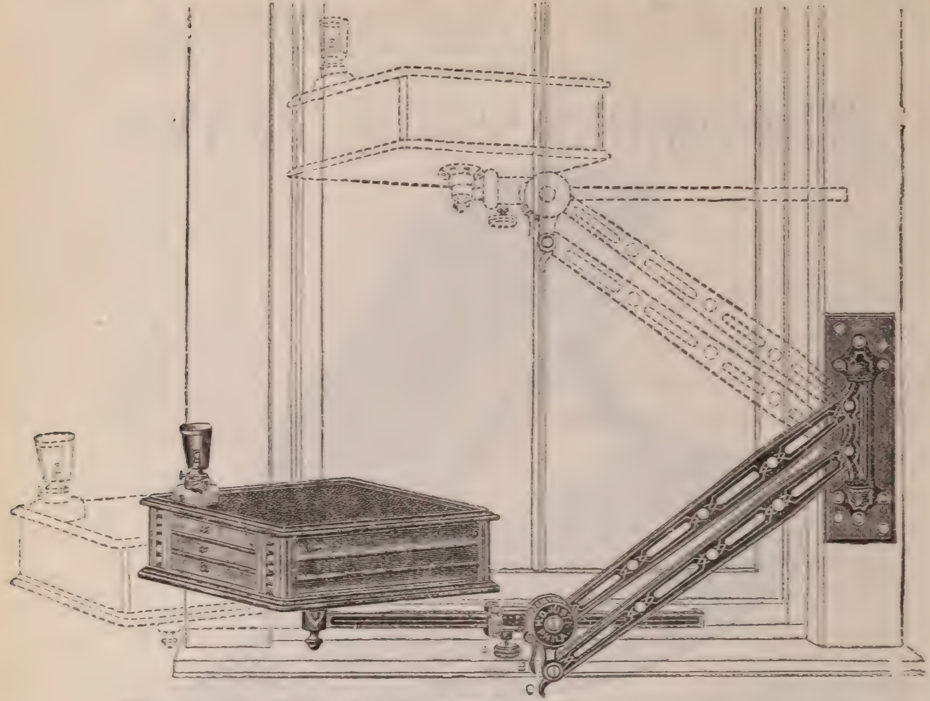

The success which this Bracket has achieved and the universal popularity and demand for it, has far exceeded our highest expectations; having made a number of improvements since its original introduction, we considered it essential to give a new illustration of it as it is now made, accompanied by the Grigg Table.

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FOR THE TREATMENT OF PULPLESS TEETH.

1. If possible, always adjust rubber dam, or usual method of keeping tooth dry. Never use a broach or drill in canal until treated with vaporizer.

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3. If there is a blind abscess in the tooth, stop up lightly with cotton and have patient return on third day. Three treatments will generally cure any case of blind abscess.

4. If there is a fistulous opening, try and force gas through same. One application is often all the case will require.

Open screw top on vaporizer and place small quantity of the iodoform (which accompanies each instrument) in chamber; then heat sufficiently, not too hot, to cause a thin stream of vapor to issue, on pressure of bulb, from point of vaporizer needle. Then insert in canal and force gas into same.

This gas will penetrate to every point in the canal and will absolutely destroy every vestige of animal life.

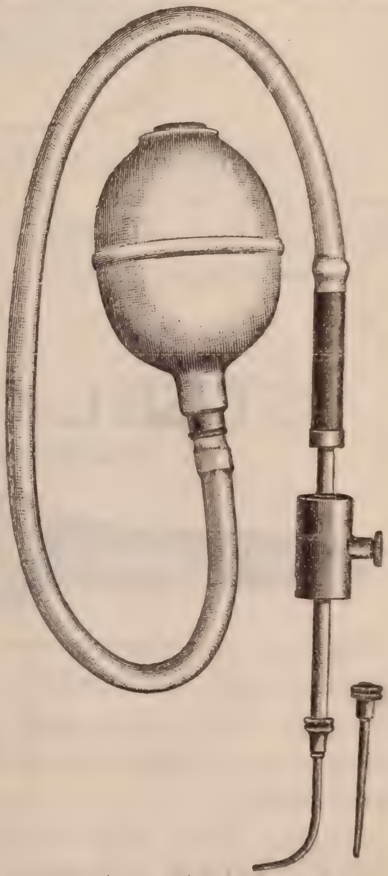

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Fig. 1.

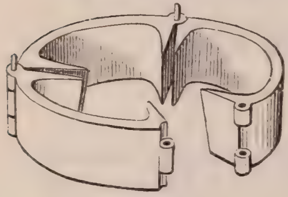

Fig. 2.

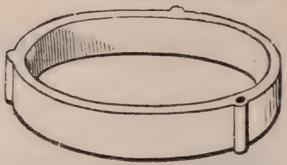

Fig. 3.

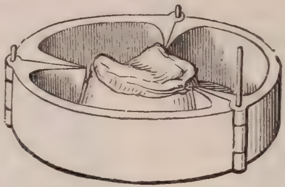

Fig. 1 represents the lower section of the Flask, slightly opened, to show the Joints. Fig. 2 is the upper section. When ready for use, the lower section is closed and confined by a Pin, and the Plaster Model placed in it, as represented in Fig, 3.

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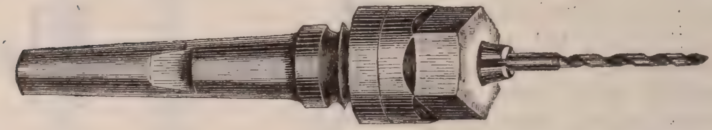

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It carries Drills, Burs, or Corundum Points of the DENTAL ENGINE, one-eighth of an inch in diameter, and under, and made to fit our AMATEUR, UNITED STATES SHORT SPINDLE AMERICAN SHORT SPINDLE, and HAND and FOOT LATHES.

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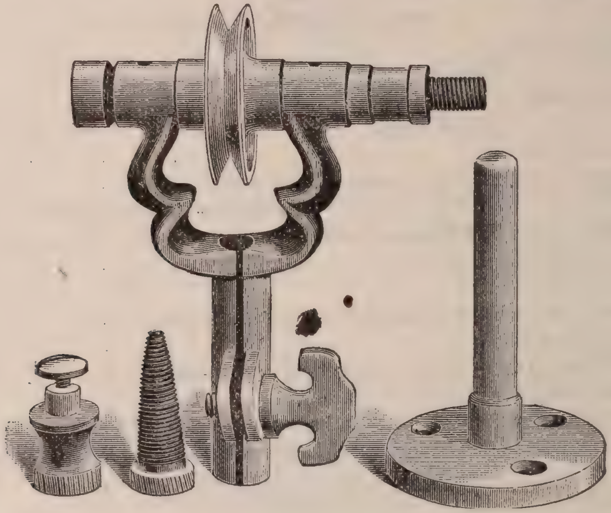

THIS LATHE HEAD CAN BE ATTACHED TO SHAW ENGINE BY SLIPPING SOCKET OVER STANDARD AND TIGHTENING THUMB SCREW. IT IS VERY LIGHT AND NEATLY NICKEL PLATED. IT RUNS VERY SMOOTHLY AND LIGHTLY. IT ALSO CAN BE MOUNTED ON TABLE AS SHOWN IN CUT BY THE SMALL ATTACHMENT. . . . .

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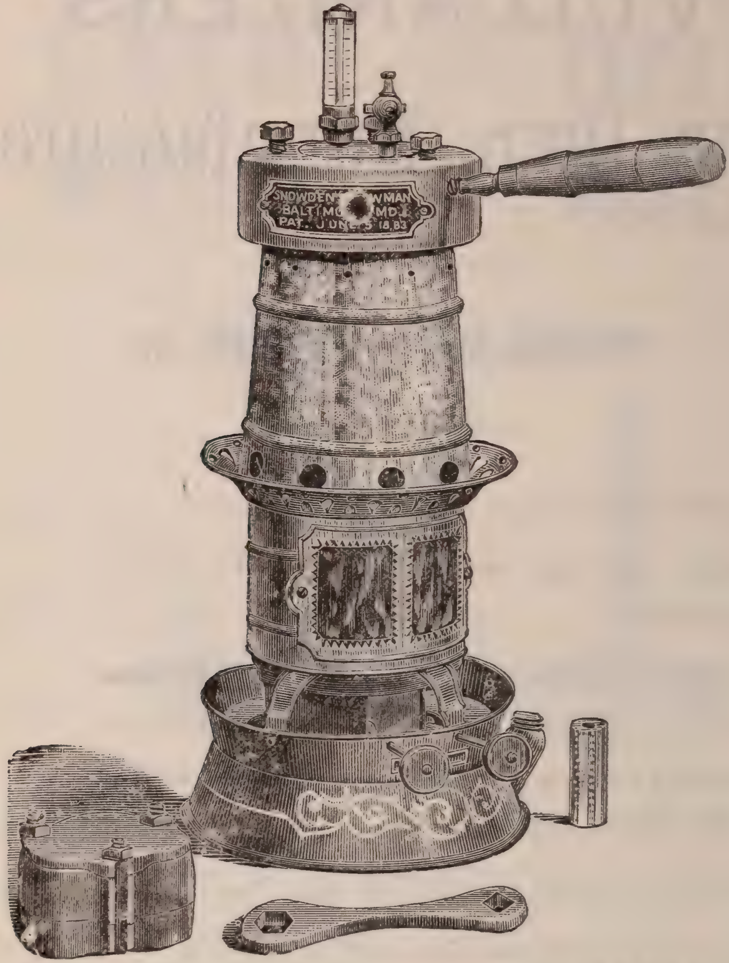

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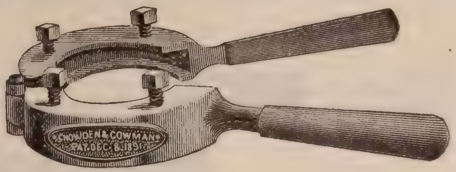

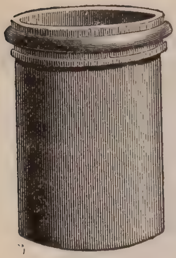

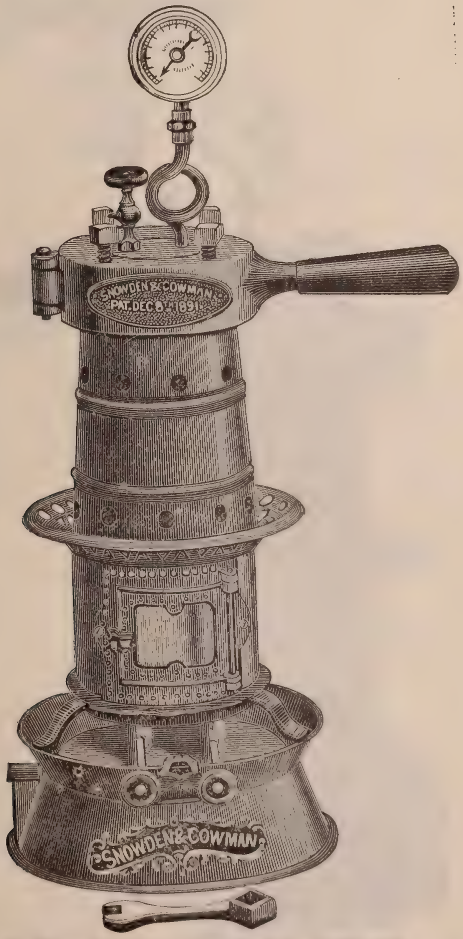

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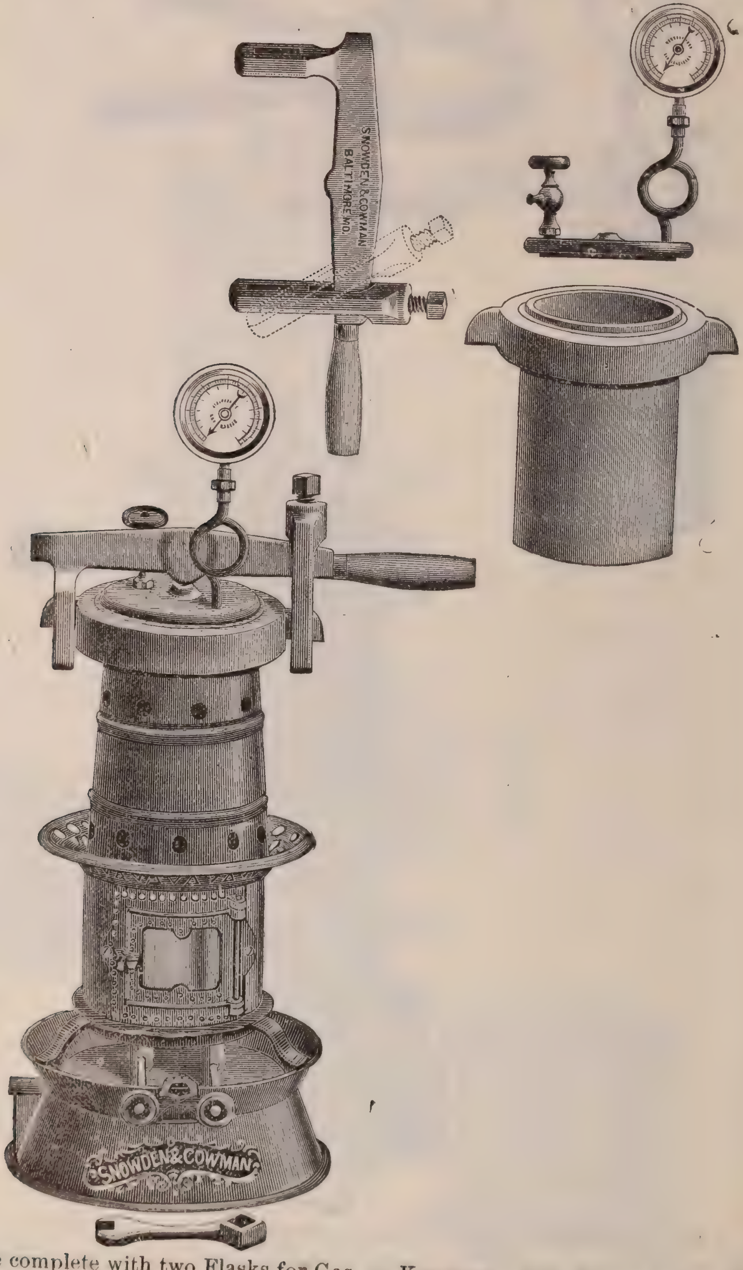

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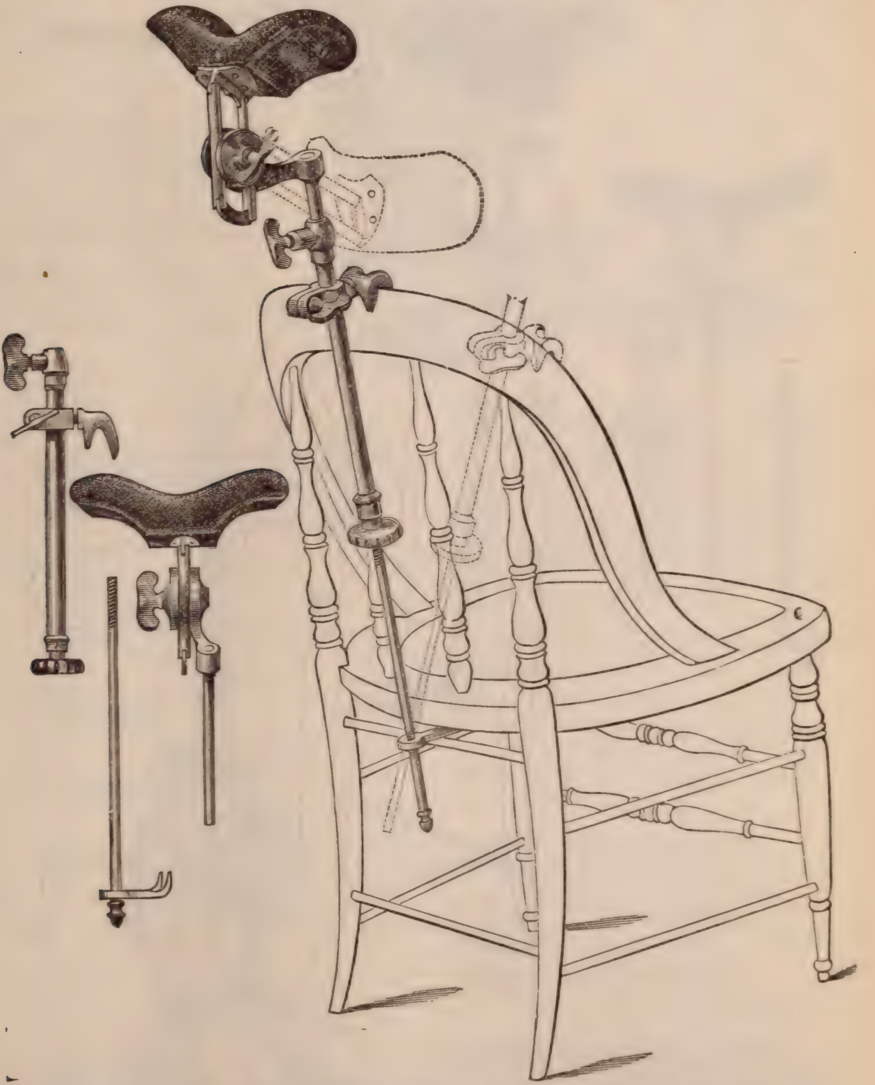

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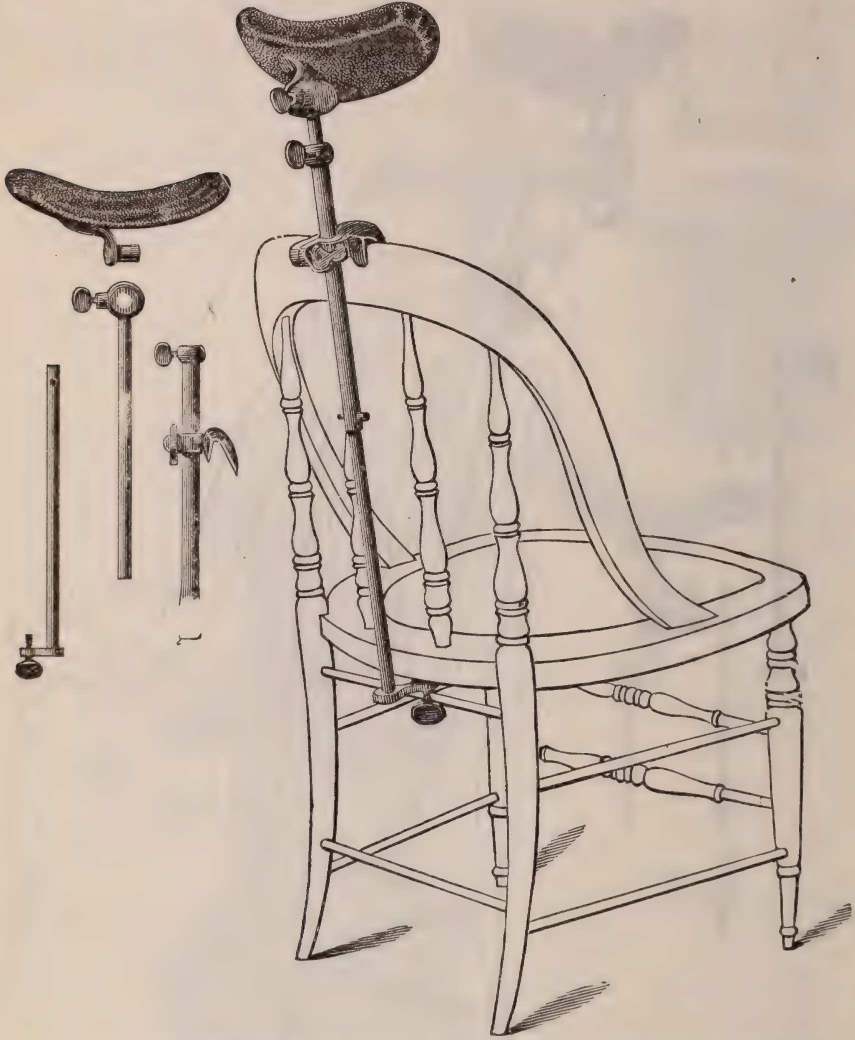

This Head-Rest can be attached to any chair, is very firm, and can be raised, lowered or moved backward or forward without interfering with attachment to the chair. Handsomely painted and bright parts nickel-plated.

It weighs only 4 lbs., and occupies a space only of 13 x 4 inches. PRICE, $4.50.

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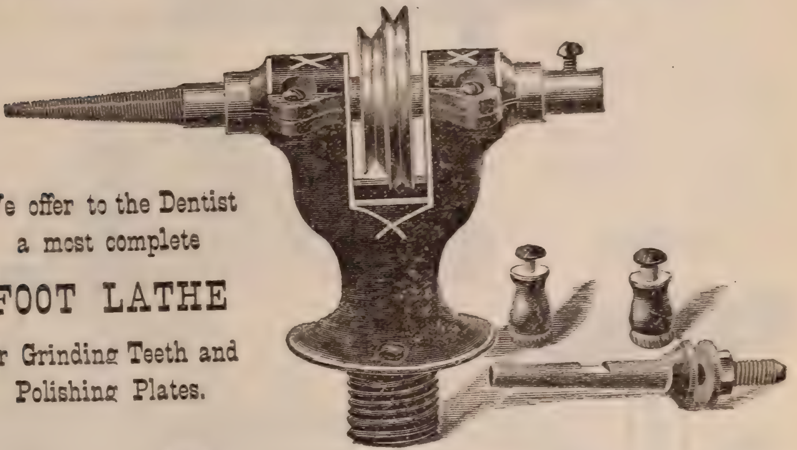

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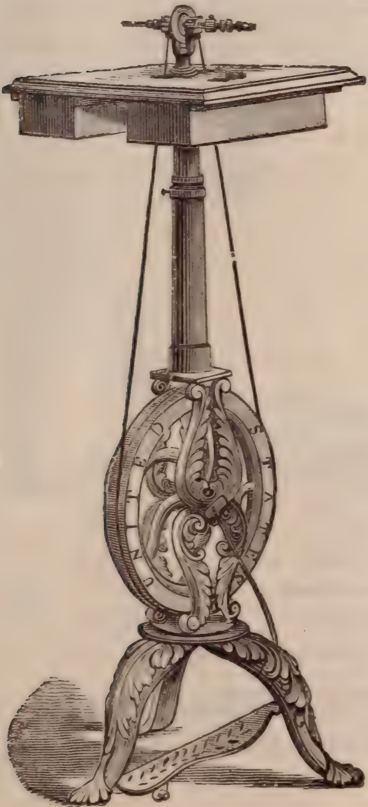


It has been gotten up in a superior manner, great care having taken to make it durable and efficient. It has a movable column and table, which is capable of being elevated eight inches, to accommodate the operator in either a sitting or standing posture.

It can be packed in a box sixteen inches square, and can be set up in a few minutes, presenting a very neat and pleasing appearance, suitable for the office or laboratory. It is finished in bronze, and runs very light and steady.

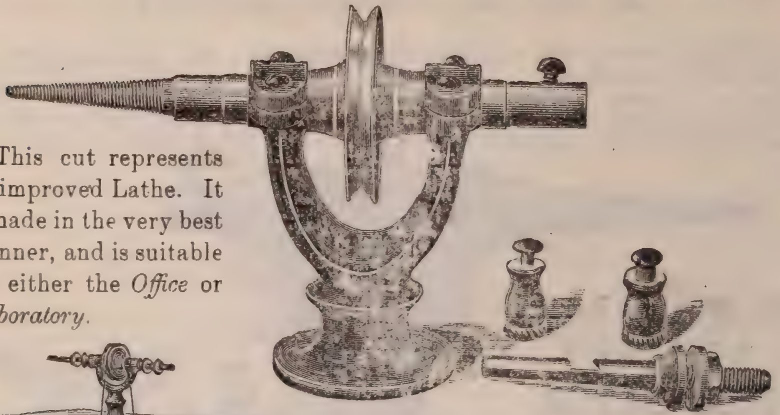
Price of Lathe complete with Short Spindle, as per cut,	$15.00
Price of Lathe complete with Long Spindle,	15.00
Price of Stand only, including Cord and and Coupling,	11.00

Snowden & Cowman Mfg. Co.,

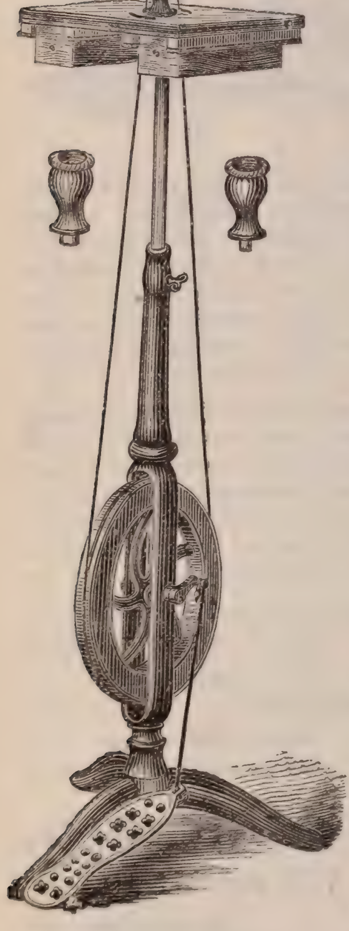
9 W. Fayette Street,

BALTIMORE, MD

AMERICAN LATHE, PRICE REDUCED.



This cut represents an improved Lathe. It is made in the very best manner, and is suitable for either the *Office* or *Laboratory*.



It has a solid spindle, one end of which is a taper screw for brush or felt wheels, and also, a space for a large corundum wheel. The other side of the spindle has a space for a large corundum wheel and a screw to receive the chucks, on which very small corundum wheels can be placed

It has a movable column and table, which is capable of being elevated ELEVEN inches, to accommodate the operator in either a sitting or standing posture.

Either end of the spindle can be thrown towards the operator, if more convenient, by the set screw at the top of the column.

We also make for this Lathe a Socket Spindle—similar to our U. S. Lathe Short Spindle.

Price of Lathe, as per cut, with two Chucks, - - - -	$14.00
Price of Lathe, with Socket Spindle, with two Chucks, - -	14.00
Price of Lathe, with Extra Large Driving Wheel, - - -	15.00
Chucks, extra. - - - - -	.15

☞ No charge for Boxing.

SNOWDEN & COWMAN MFG. CO.,

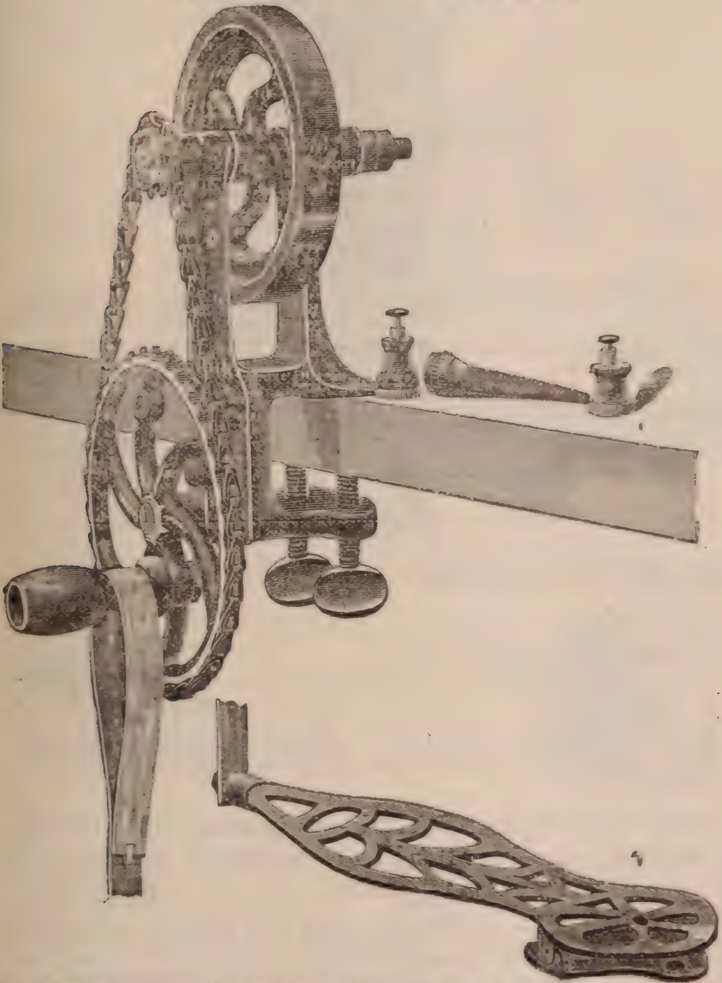
9 W. Fayette Street, Baltimore

SOMETHING NEW FOR TRAVELLING DENTISTS.

LINK CHAIN LATHE,

TO BE USED EITHER BY HAND OR FOOT POWER.

PRICE, - $7.00.

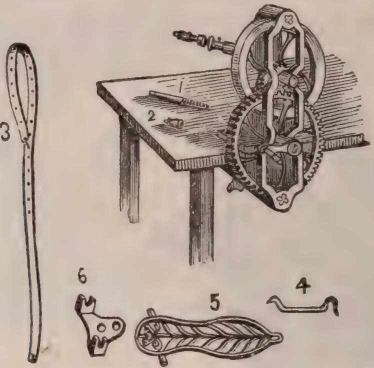


The Fly Wheel with Spindle is driven with an Endless Chain and makes very little oise, as it is propelled by large and small Sprocket Wheels, this gives it a very steady ovement and does not require as much power as a geared lathe. It is fastened to table bench by two Thumb Screws which make it impossible to turn when both are screwed p. It is very light and can be carried in a small satchell.

Snowden & Cowman Mfg. Co.,
W. Fayette Street, BALTIMORE, MD.

PRICE REDUCED.

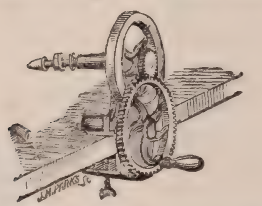
Portable Hand or Foot Lathe.



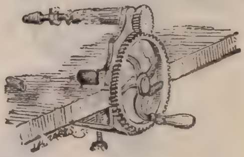
The above is a cut of a PORTABLE HAND OR FOOT LATHE, which is very efficient, manufactured for the traveling dentist; weighs under 7 pounds, and occupies the space of 6 by 9 inches. Members of the profession who have seen it pronounce it first rate.

Price, complete, - - - - - -	$5 50
Without Foot Attachment, - - - -	5 00

Hand Fly Wheel Lathe.



Hand Lathe.



HAND FLY WHEEL LATHE.—It is intermediate between the Hand Lathe, and the Hand and Foot Lathe; it weighs only three pounds and is a first rate Lathe. - - PRICE, $4 50

HAND LATHE.—It is small, strong and durable, and weighs only two and a quarter pounds; we have sold a large number of these Lathes,—giving great satisfaction. - • PRICE $4 00

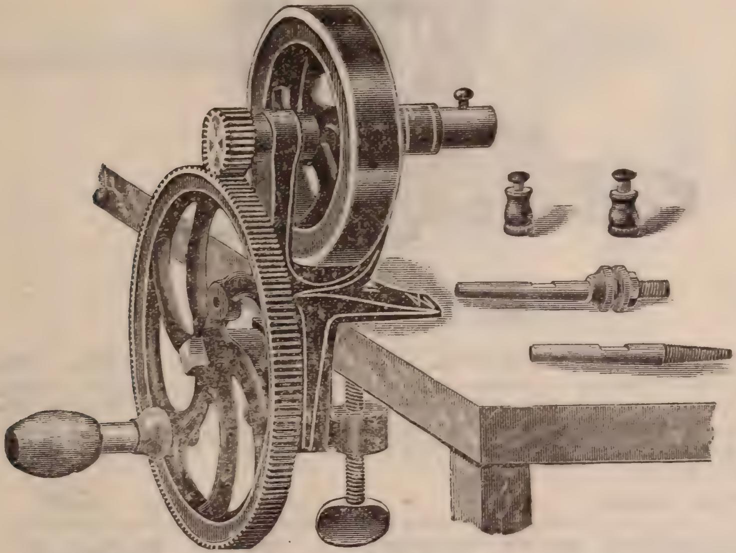
☞ All of the cog wheels of our Lathes are turned and cut on a machine, and are uniform, which makes them run true and with little noise.

SNOWDEN & COWMAN MF'G CO.,

No. 9 West Fayette St., Baltimore.

NEW HAND FLY WHEEL LATHE.

This Lathe is made larger and heavier and can be used with foot. It runs very steady and makes a good lathe for either Office Laboratory or to carry around. It is very neat.



PRICE,	- - - -	$5 00
"	with Foot Attachment and Strap,	5 50.

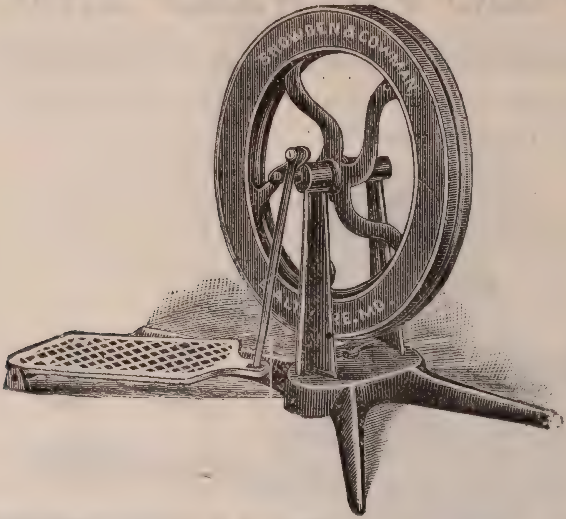
'The proof of the pudding is in the eating."

If the experience of dentists generally did not prove OUR GOLD AND PLATINA ALLOY a superior filling they would not be willing to pay nearly double more for it than the price of common amalgams. I suppose there is not another alloy or amalgam so generally used by our better class of dentists.

Welch's Alloy, 1 oz. $3.00; 2 oz. $5.50, 4 oz. $10.00; 10 oz. $22.00.
Welch's Amalgam, 1 oz. $2.00; 2 oz. $3.50; 4 oz. $7.00; 10 oz. $15.00.
Welch's Oxiphosphate, large $1.50; medium $1.00.
Liquids or powders, large 75 cts.; medium 50 cts.

T. B. WELCH, - - - - Vineland, N. J.

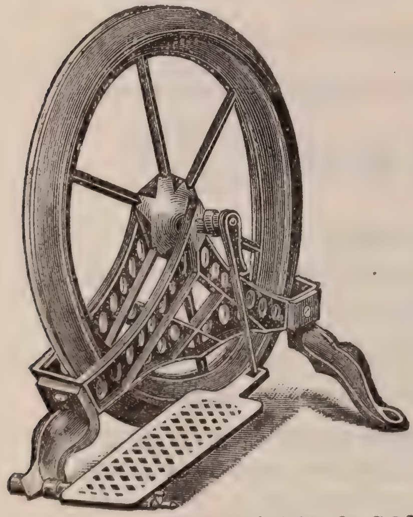
FLY WHEEL, No. 1, NEW.—Price Reduced.



This Fly Wheel weighs 30 lbs., with diameter of wheel 15 inches. The stand is the stiffest and steadiest of any driving wheel in the market. Owing to the position of the feet and the peculiar arrangement of the treadle, the wheel has an immense power and is very light running. In boxing remove pin that connects treadle with rod and fold treadle by side of the wheel. Weight complete, 46 lbs.

Price Boxed, - - - - - - $7.00

DIAMOND FLY WHEEL.—Price Reduced.



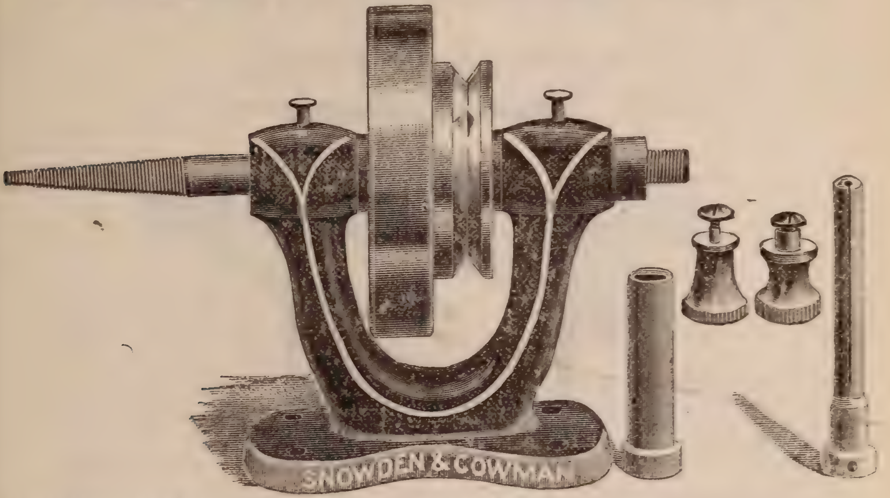
This fly-wheel is eighteen inches in diameter, with wrought iron spokes, in an iron frame, complete in itself, can be set any where, and runs very steady.

It has sufficient power and speed for any Dentist's Lathe Head. The feet are easily detatched, and all can be packed in a smaller box than any other Fly Wheel of its dimensions in the market.

Price Boxed, - - $7.00.

SNOWDEN & COWMAN MFG. CO.,
No. 9 W. FAYETTE STREET,
Baltimore.

OUR NEW LATHE HEAD.

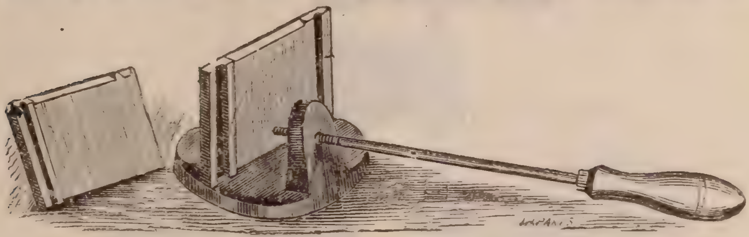


VERY SIMPLE AND EASY RUNNING.
ADJUSTMENT QUICKLY MADE.
VERY DURABLE AND STEADY.

PRICE WITH 4 CHUCKS, - - - $5.00.

SNOWDEN & COWMAN MFG. CO.'S

INGOT MOULDS.



No. 1, will cast a plate from one half of an inch to two inches in width, also a round, half-round and square bar. - $2.25

No. 2, will cast a plate from one half of an inch to two and three quarter inches in width, also a round, half-round and square bar. - - - - - - - $2.75

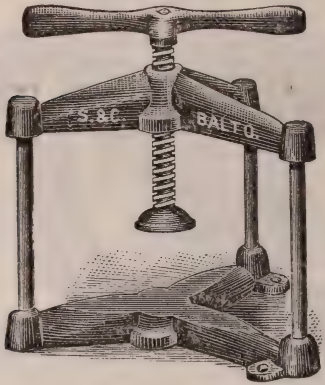
No. 3, will cast a plate 3 inches wide and 4 inches long also round, half round and square bar, - $3.25

LIBERAL DISCOUNT TO THE TRADE.

Snowden & Cowman Mfg. Co's

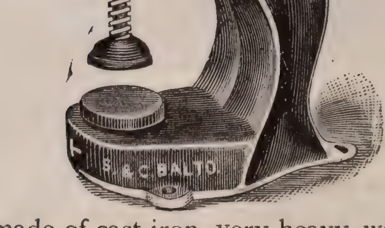
Flask Presses.

No. 1, Old Style Improved.



This Press is intended to close the flask after packing with rubber. It is of great advantage, saving screws and flasks. The upright rods are of wrought iron and the handle of the screw can be detached. They are *well made* and *very strong*, and has been made larger, so that it will take any Flask in the market. Price, - - - - $1.50.

No. 2, New Stvle.

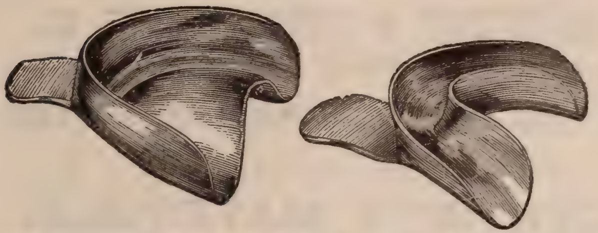


This Press is made of cast iron, very heavy, with steel screw and detachable handle. It has a Pivot Plate to level up the flask, insuring always a central pressure on the flask ; will take any flask in the market. Price - - $1.50

BRITANNIA IMPRESSION CUPS

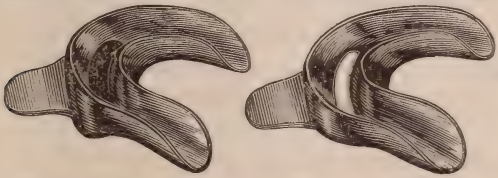
LONG HANDLES.

We Manufacture the following Sizes and Varieties:



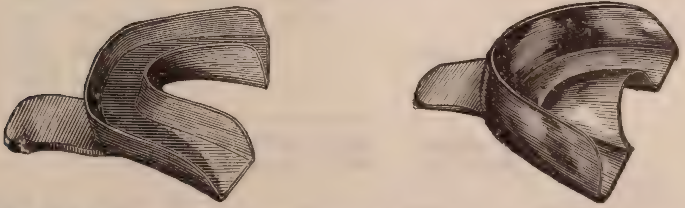
UPPER, Nos. 00, 0, 1, 2, 3, 4, 5, 6, 7.—(No. 00 is the largest size.)
LOWER, " 1, 2, 3, 4, 5. —(No 1 is the largest size.)

PARTIAL LOWER CUPS.



ENCLOSED CAVITY, Nos. 9, 10, 11.—(No. 9 is the largest size.)
OPEN CAVITY, Nos. 6, 7, 8. —(No. 6 is the largest size.)

UPPER AND LOWER CUPS.



PARTIAL UPPER—Flat Bottom, Nos. 8, 9, 10, 11—(No. 8 is the largest.)
FULL LOWER— " " " 12, 13, 14—(No. 12 is the largest.
PRICE............................Each....................25cts

SNOWDEN & COWMAN MFG. CO.
9 West Fayette Street, Baltimore Md

Dental Depot,

ESTABLISHED 1856.

SNOWDEN & COWMAN MFG. CO.

MANUFACTURERS OF

Lathes, Head Rests, Vulcanizers, Impression Cups, &c.

AND DEALERS IN

DENTISTS' MATERIALS,

No. 9 W. Fayette St., between Charles & Liberty Sts

BALTIMORE.

GOLD FOIL.

	Per 2 oz.	oz.	½ oz.	¼ oz.	⅛ oz.
Abbey & Sons,		$32.00	$16.00	$8.00	$4.
Valleau's		30.00	15.00	7.50	4.
Ney & Co's.		29.00	15.00	7.50	4.
S. S. White's, ¼ Century,	$58.00	30.00	15.00	8.00	4.
" " Globe,	58.00	30.00	15.00	8.00	4.
" " 1000 Fine,	58.00	30.00	15.00	8.00	4.
R. S. Williams, Cylinders, A,		30.00	15.00	8.00	4.00
" " " B,					
" " Rect. Pellets,					
" " Standard,					
Watt's Crystal,		32.00	16.00	8.00	4.00
E. Rowan & Co.		29.00	15.00	3.20 per 1-10 oz.	
" untrimmed,				5.60 per 1-5 oz.	
"				2.90 per 1-10 oz.	

TIN FOIL.

Ney & Co's--Nos. 4, 6, 8, and 10, - -	40 Cents per Book
S. S. White's, - - - - - -	30 " " "
Nos. 4, 6, 8 & 10, (extra tough)	40 " " "

SNOWDEN & COWMAN MFG. CO.,

No. 9 West Fayette Street Baltimore

PORCELAIN TEETH.

GREATLY REDUCED.

We keep on hand a large assortment of Teeth of the following Manufacturers, which we

SELL AT THEIR REDUCED PRICES.

The S. S. White Dental Manf. Co.'s

	Each.	$10 lots.	$25 lots.	$50 lots.	$100 lots.	$300 lots.
Plain Rubber & Plate Teeth	.12	.11½	.11	.10	.09	.08
Gum Sectional Rubber, Plain Plate, long Pins, Single Gum Rubber and Gum Plate Teeth,	.12½	.12	.11½	.11	.10	.09

H. D. JUSTI & SON'S.

	Each.	$10 lots.	$25 lots.	$50 lots.	$100 lots.	$300 lots.
Plain Rubber and Plate,	12.	.11½	.11	.10	.09	.08
Gum Sectional Rubber, Plain Plate, Single Gum Rubber and Gum Plate,	.12½	.12	.11½	.11	.10	.09

Sibley's or Wilmington Co.'s Gum or Plain Teeth.

Per Set 14 Gum or Plain,	$ 1 00
11 Sets, " " "	10 00
29 " " " "	25 00
60 " " " "	50 00
125 " " " "	100 00

Less than Set of Fourteen Eight Cents per Tooth.

SNOWDEN & COWMAN MFG. CO.

DENTAL DEPOT

No. 9 W. Fayette Street.

AMALGAMS.

Townsend's	$1.75	per ounce
Chicago Refining Co's	4.00	" "
Caulk's Par-Excellent Alloy,	2.50	" "
Caulk's White Alloy,	3.50	" "
Lawrence's	3.00	" "
Arrington's	2.00	" "
King's,	3.00	" "
Globe Alloy,	2.50	" "
Alba "	2.50	" "

CEMENTS.

Agate Cement, in 1 oz. Boxes,	$1.50
" " " ½ "	75
Weston's Insoluble Cement, one or two colors,	1.00
Dr. Flagg's Plastic Enamel, per Pk'g,	2.00
Fossiline, " "	2.00
Metcalf's Cement, " "	2.00
H D. Justis's Insoluble Cement,	
1 oz. Package, 1, 2, 3, 4 Colors,	3.00
½ " " any above "	1.50
J. D. Justis's Acme Cement,	
Per Box,	1.00
Dr. T. B. Welch, & Son, Art. Dentine, per Pk'ge	1.50
" C. N. Pierce Phos. Zinc, " "	2.00
" T. O. Oliver's Oxy Phos, " "	2.00
" Smith's " Chloride, " "	1.00
Houghtons's Os-Artificial, " "	75
Poulson's Mineral Plombe, " "	2.50
Dawsons's Mineral Cement " "	1.50
Caulks's Diamond "	
Per Package, 2 Colors,	1.25
" " 1 "	75
J. Ogden Britten's Cement, 2 colors,	1.50

DENTAL RUBBER.

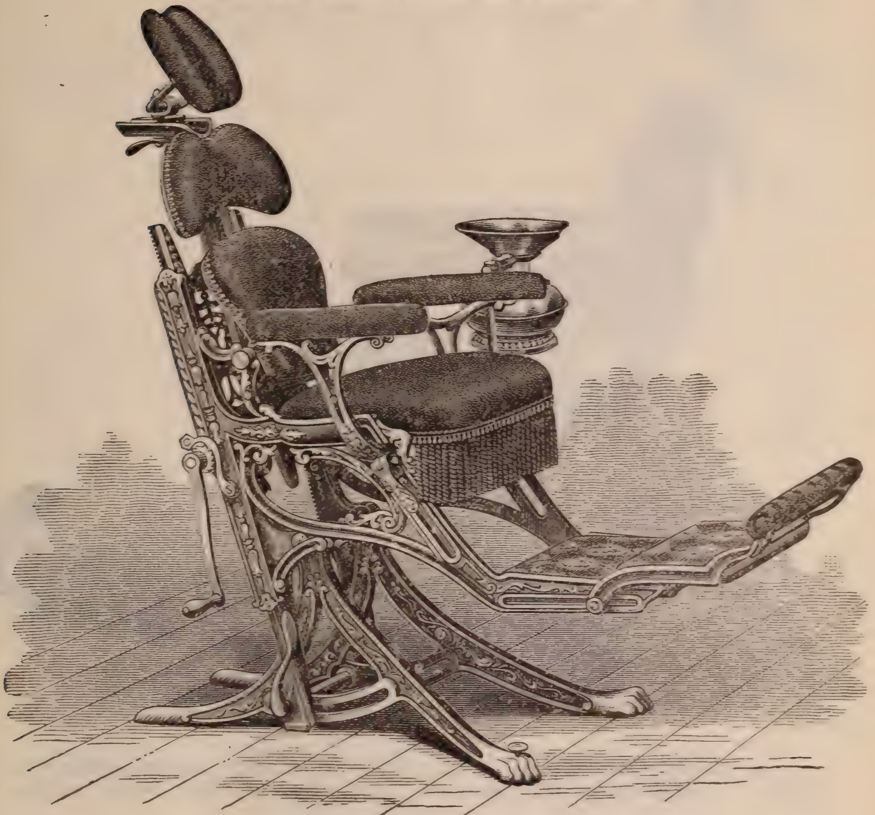
Ram's Horn Rubber,	per lb.	$2.25
" " " Pink	"	5.00
Sam'l S. Whites' No. 1 Improved,	"	2.25
Doherty No. 1,	"	2.25
" " 2,	"	2.25
Sam'l S. White's Bow Spring,	"	2.75
Black Rubber	"	2.50

GUTTA-PERCHA.

Ram's Horn,	per lb.,	$2 25
Sam'l S. White's	"	2.25

THE MORRISON DENTAL CHAIR.

Reissue May 15, 1877. English Patent Deo



PRICES.

In best quality Green or Garnet Plush or Plain Morocco . . .	$100.00
In Real Morocco, Embossed	110.00
In finest quality Green or Garnet Plush, puffed and trimmed with Silk Plush, full Turkish Upholstery	120.00

The Illustration shows No. 4 Spittoon, No. 3 Bracket, No. 3 Socket, which are extra and add $8.00 to above price.

BOXING FREE.

STUDENT'S MORRISON CHAIR.

To meet an often-expressed want of a first-class chair at a low price, the Student's Morrison was brought out. It is, in all respects, equal to the regular Morrison chair, except that it is upholstered in a seal-brown corded material, instead of a plush. It presents a very neat appearance, and will wear nearly as well as plush.

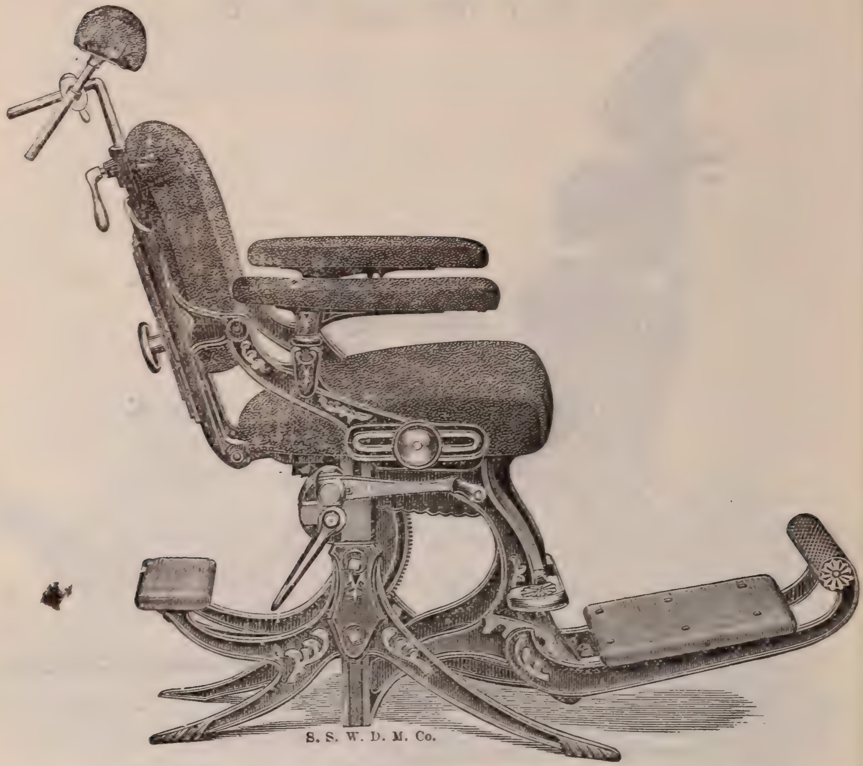
PRICE.

In Corded Upholstery.	$ 85.00

We supply either style of the Morrison Chair, with or without Casters When ordered with Casters, the price is $10.00 extra.

For Sale by Snowden & Cowman Mfg. Co., 9 W. Fayette St., Baltimore.

THE CYCLOID CHAIR



Patented December 28, 1875; July 3, 1877; November 20, 1877; March 9, 1880; May 22 1883. Re-issues July 4, 1876; March 19, 1878; August 27, 1878. Others pending.

This Chair was designed especially to meet a demand for a chair which, while affording a variety of essential movements, could be sold at a lower price than the Wilkerson, The S. S. White Pedal-lever, or the Morrison.

For those who want a low-priced chair which in facility of movements far surpasses anything heretofore offered for the money, the Cycloid is *the* chair. It is strongly built, and the finish and general appearance make it a desirable addition to a well-furnished office.

The lifting mechanism, which has a range of 10 inches, is entirely new and is worked with great ease and rapidity. Should the crank by accident slip from the hand the descend of the Chair is automatically arrested.

The arms are so arranged that they may be rotated out of the way of the operator and yet be of service to the patient.

The foot-board can be adjusted in four positions, and a permanent support for the foot of the operator is placed at the back of the base, the convenience of which will be obvious to those who are in the habit of using a "cricket."

Nearly all of the movements can be made with one hand while standing at the side of the Chair.

Price, upholstered in Corded Material, - -	$ 70.00
" " Best Quality Maroon or Green Plush,	85.00

For Sale by SNOWDEN & COWMAN MFG. CO,

Snowden & Cowman Mfg. Co.'s

DENTIST'S CASE BOOKS,

For Recording all Operations in Dentistry

WITH

TITLE PAGE, INDEX or ALPHABET, and the pages numbered, printed on fine paper with a DIAGRAM of the teeth at the top of each page, neatly and substantially bound in muslin.

PRICES.

One Quire Book,	$1 00
Two "	1 75
Three "	2 50
Four "	3 25

DENTISTS' BILL HEADS.

These Bill Heads are printed on fine paper with diagram of the teeth on each, in the following sizes:

No. 1.—Size, 8½ inches wide by 7 inches,	Price per 100,	$ 50
No. 2.—Size, 4½ inches wide by 7 inches,	"	40
No. 3.—Size, 8½ inches wide by 7 inches,	"	50

JOB PRINTING.

Having fitted up a Printing Office in our establishment, we are prepared to fill at the very shortest possible notice, orders for various kinds of Printing, such as

CIRCULARS, BILL HEADS, NOTE HEADS,
STATEMENTS, HEADINGS, LABELS,
ENVELOPES, CARDS, &c.

☞Liberal Discount to the Trade.

PUBLISHERS OF

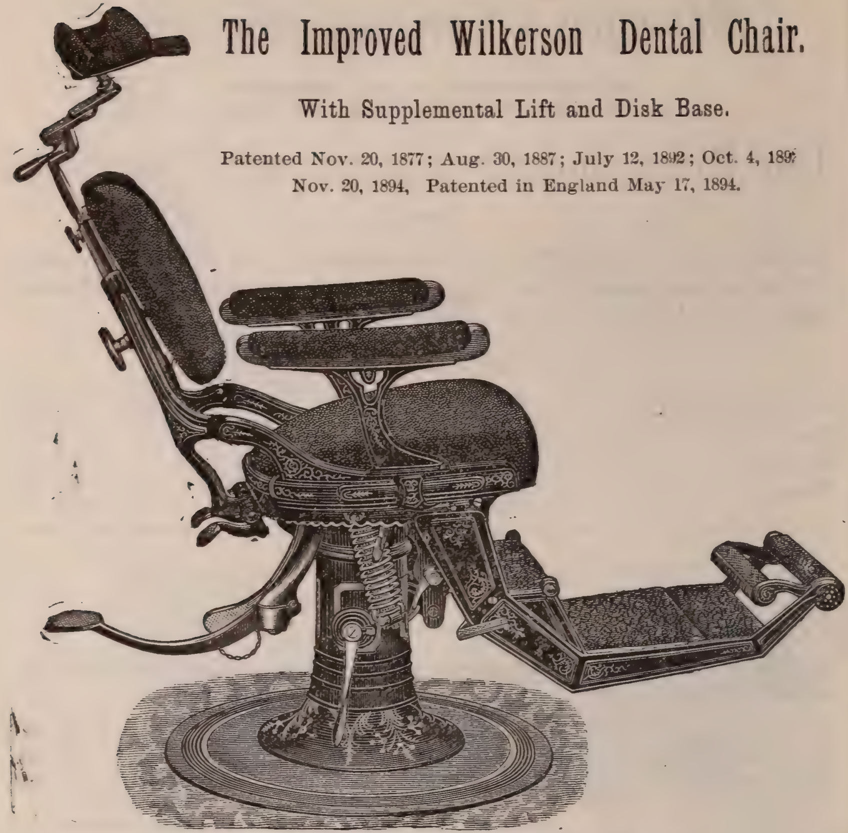
The American Journal of Dental Science,

$2.50 PER YEAR.

The Improved Wilkerson Dental Chair.

With Supplemental Lift and Disk Base.

Patented Nov. 20, 1877; Aug. 30, 1887; July 12, 1892; Oct. 4, 189
Nov. 20, 1894, Patented in England May 17, 1894.



LOWEST POSITION OF THE CHAIR.

Supplemental Lift for the Wilkerson Chair.

One of the most difficult problems in the production of a first-class dental chair has been to obtain the great range of vertical adjustment which is desirable to meet the needs of the dentist without incurring one or more objectionable complications, such as the cutting of the floor of the operating-room or the telescoping of the supports.

The Supplemental Lift, when placed upon the Low or Medium-Base Wilkerson Chair, enables us to meet this problem in a more satisfactory manner than anything hitherto offered.

When placed intermediate between the regular plunger elevating device and the body or frame of the chair, it is possible to lift the chair, before the patient steps in, either five or ten inches, after which the treadle elevating apparatus may be used, as before, thus in fact increasing the vertical range of the chair by the amount of the adjustment mentioned, ten inches.

The operation of the apparatus is simple, the weight of the chair body being almost perfectly balanced by springs, so that it may be raised five inches to the first notch; or through the entire range of ten inches, by lifting by the chair arm.

PRICES. The supplemental lift adds twenty-five dollars to the prices of the Disk Base chair as given on the opposited page.

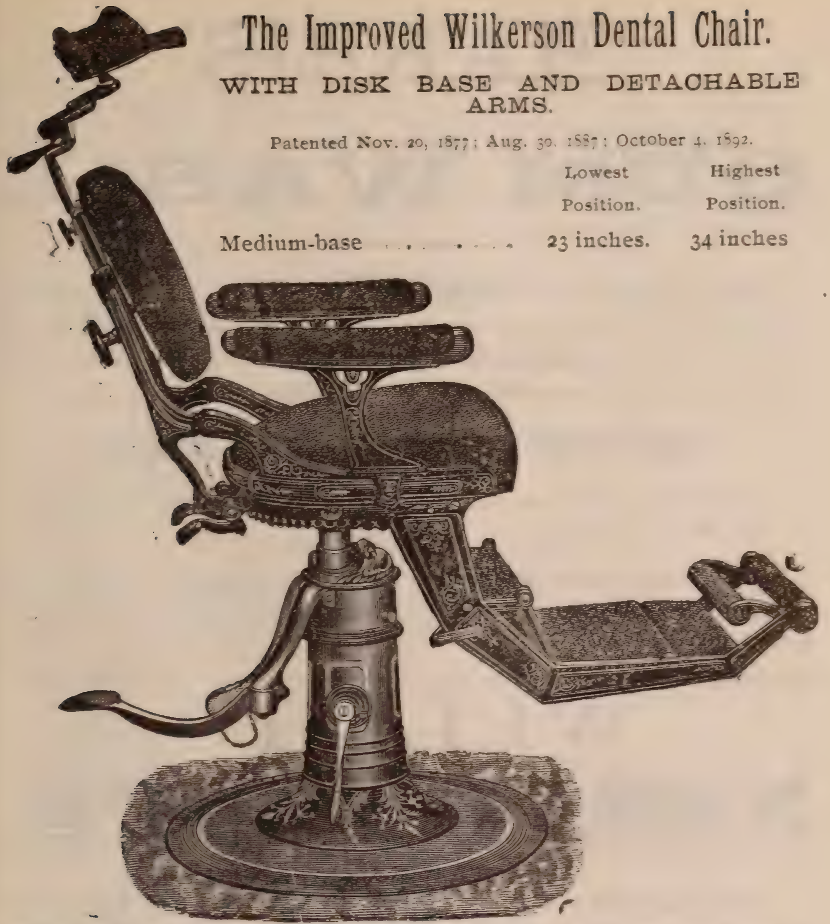
For Sale by Snowden & Cowman Mfg. Co.,
9 West Fayette Street, Baltimore.

The Improved Wilkerson Dental Chair.

WITH DISK BASE AND DETACHABLE ARMS.

Patented Nov. 20, 1877; Aug. 30. 1887; October 4. 1892.

	Lowest Position.	Highest Position.
Medium-base	23 inches.	34 inches



To accommodate those who prefer the Disk Base we have added to our line of dental Chairs the Wilkerson in this style, as shown in the cut, and we are now ready to furnish the *medium range* Chair on the Disk Base.

The high and low range Chairs with Disk Base are now in process of manufacture and will soon be ready for delivery.

Prices of the Wilkerson Chairs, with either Disk or Leg Base, are the same. *In ordering chairs be particular to state if Disk Base is wanted ; if not specified, the regular form will be sent.*

PRICES.

	Medium Bas
In Best Quality Green or Maroon Plush	$150.00
" Maroon Plain Turkey Morocco	150.00
" French Finish Maroon-colored Leather	150.00
" Seal	157.00
" Best Quality Green or Maroon Plush, puffed with Plush, trimmed with Silk Cord, with Wilton Capet .	170.00
" Embossed Turkey Morocco, puffed with plain Morocco, edged with Cord, with Carpet to match . .	180.00

Watkins Sectional Head-Rest adds ten dollars ($10.00) to the above prices.

BOXING FREE.

For Sale by Snowden & Cowman Mfg. Co.,
9 West Fayette Street, Baltimore.

HARRIS'

GUM WASH.

This very pleasant and efficient Lotion has been found highly beneficial when applied to diseased gums after removing the causes of irritation; and in cases where teeth are sensitive from cold or the receding of the gums. Also, applied after extraction it allays pain and irritation.

NEATLY PUT UP IN THREE OUNCE BOTTLES.

3 oz. Bottles, each,	$ .25
3 oz. Bottles, per dozen,	2.75

Made from Formulae prepared by Dr. Chapin A. Harris and has been on the market for the past thirty-two years and endorsed by every dentist who has used it.

WELCH'S

NERVE PASTE.

This preparation is very certain in its action on the nerve, destroying it in less than twenty-four hours. It has the advantage of not causing pain or producing inflammation, with very rare exception. Also, it may be used with safety in cases of toothache that proceed from exposed nerve, and seldom fails to give relief in from five to twenty minutes.

Directions.—Place a portion, of the size of a pin's head, in *immediate contact* with the exposed nerves, covering it carefully with wax, allowing it to remain twenty-four hours. A very minute portion placed in a cavity, in preparation for filling, will destroy its sensibility in four to six hours. The bottle contains sufficient for two hundred applications.

N. B.—If the paste should become dry, moisten it with creosote, or warm it until it is quite soft.

☞If, after twenty-five applications, it does not give satisfaction, return the Nerve Paste and we will return the price.

For Sale by SNOWDEN & COWMAN MFG. CO.,
9 West Fayette Street.

FORCEPS.

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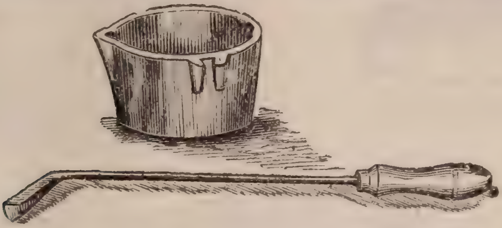

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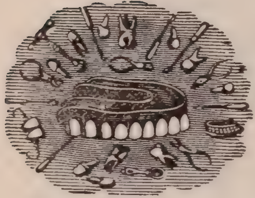

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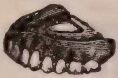

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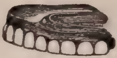

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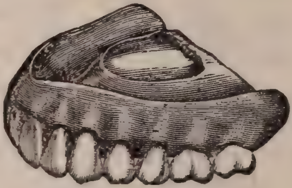

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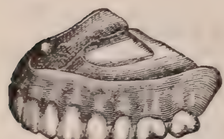

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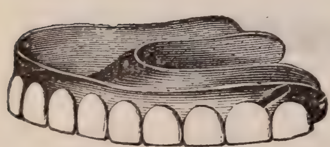

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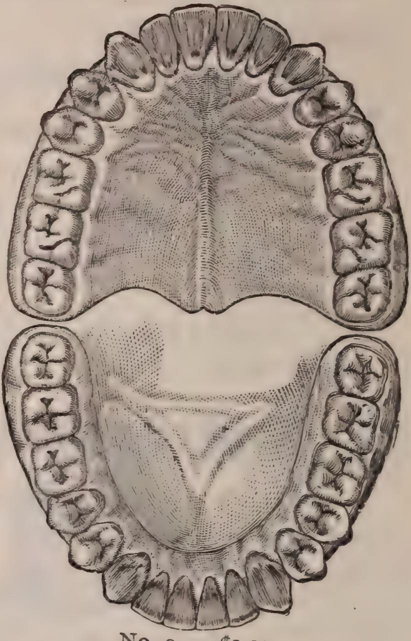

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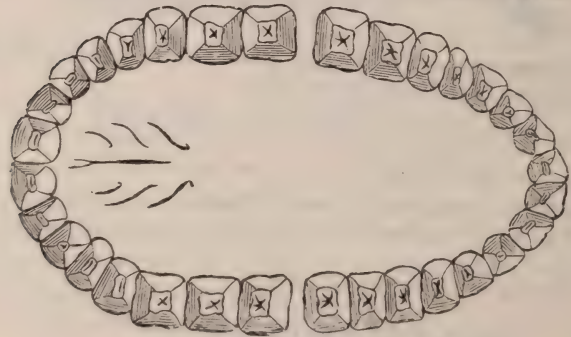

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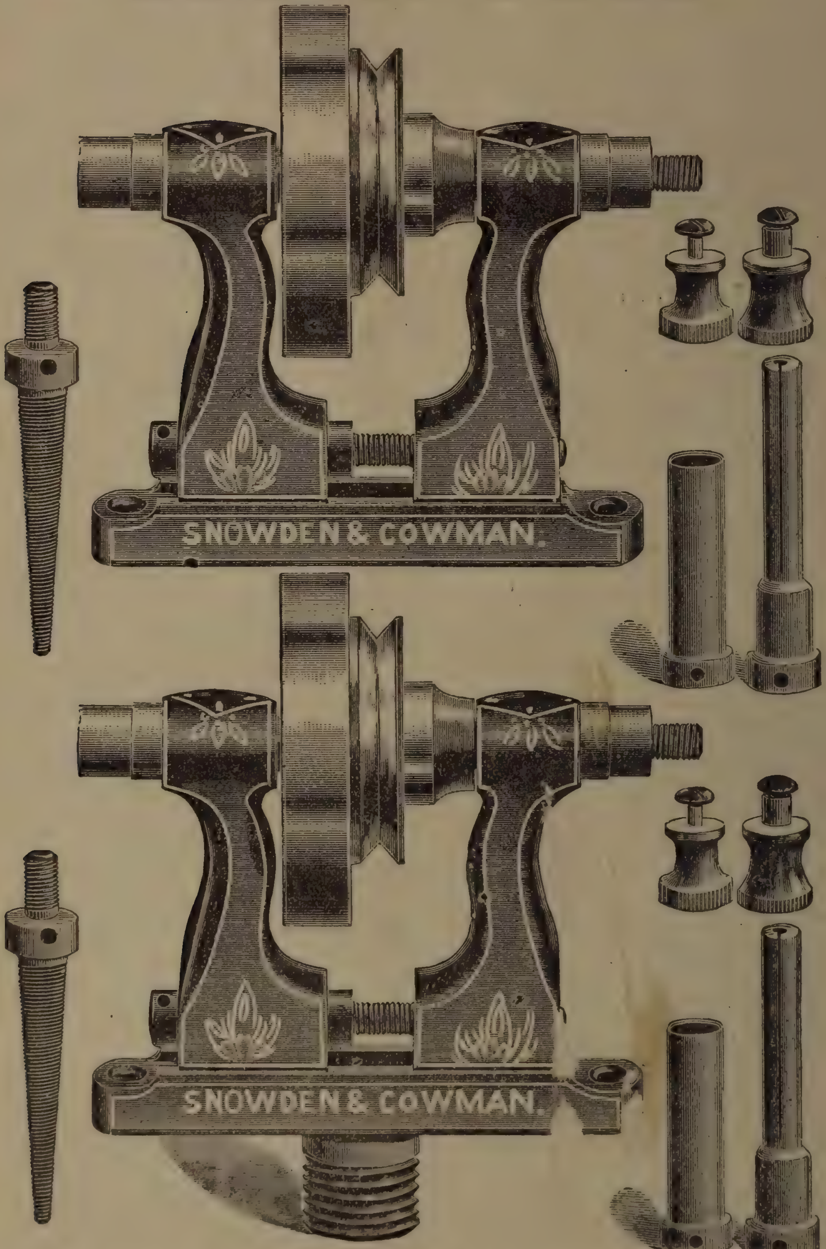
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RICHARD GRADY, M. D., D. D. S.

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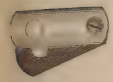

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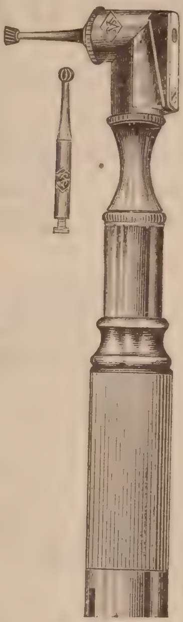

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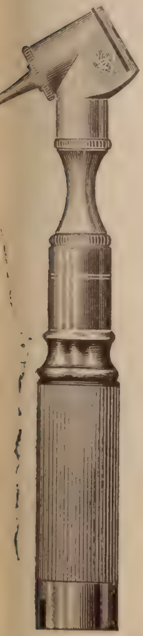

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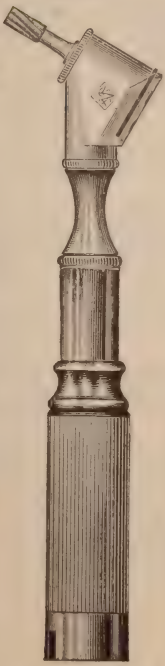

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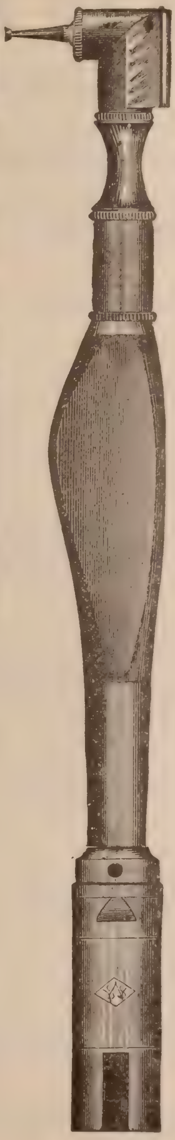

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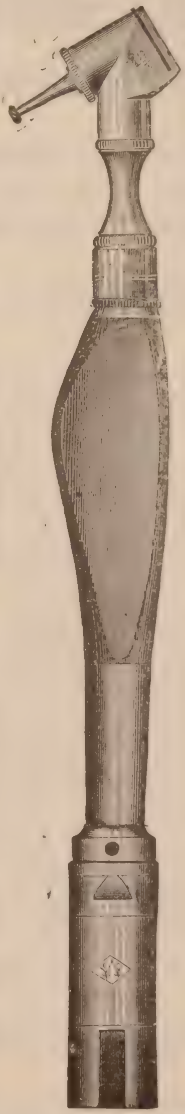

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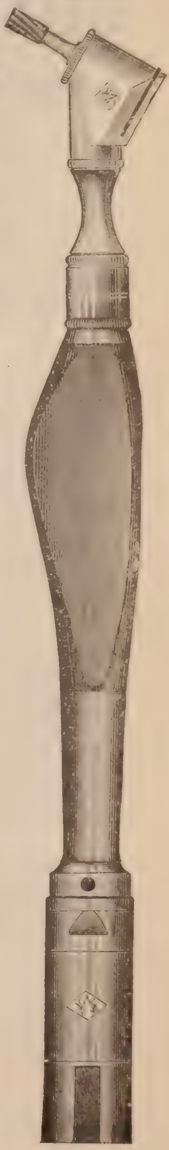

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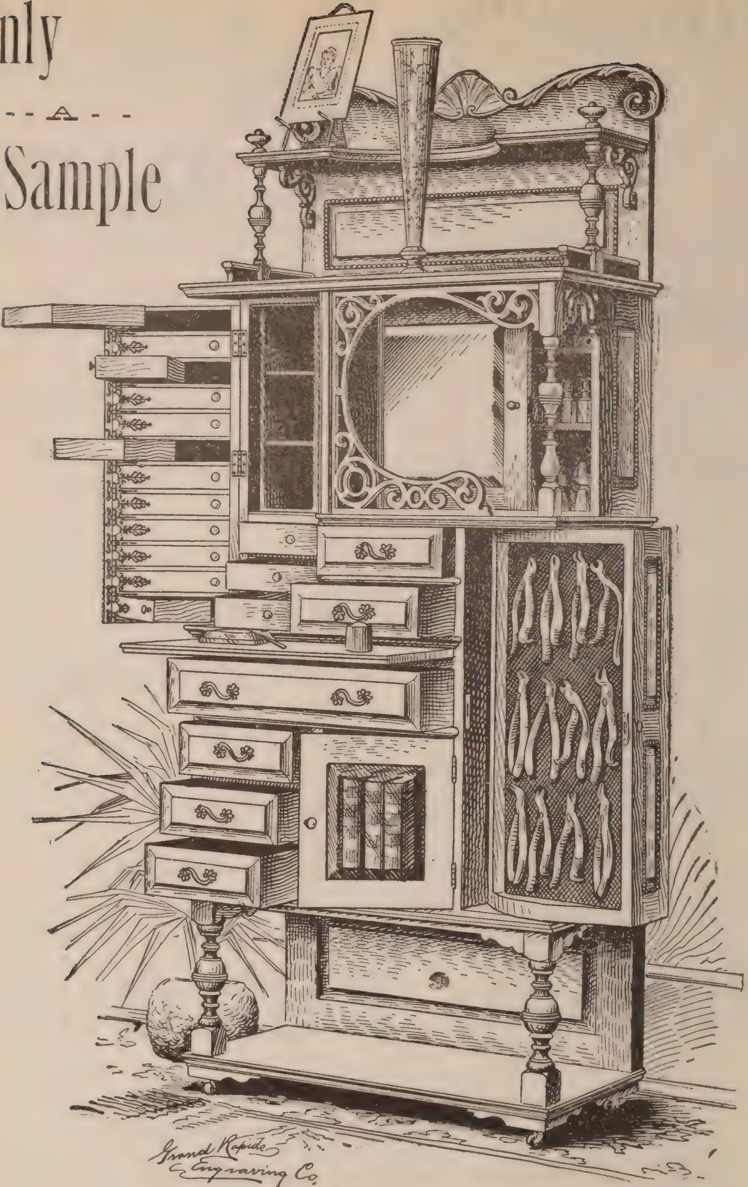
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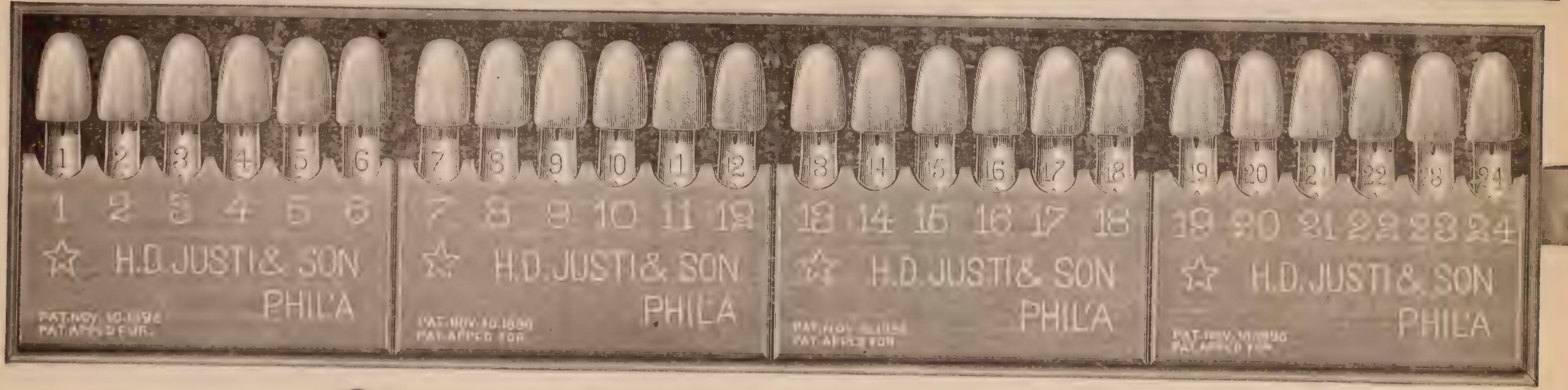

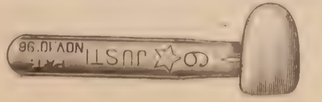

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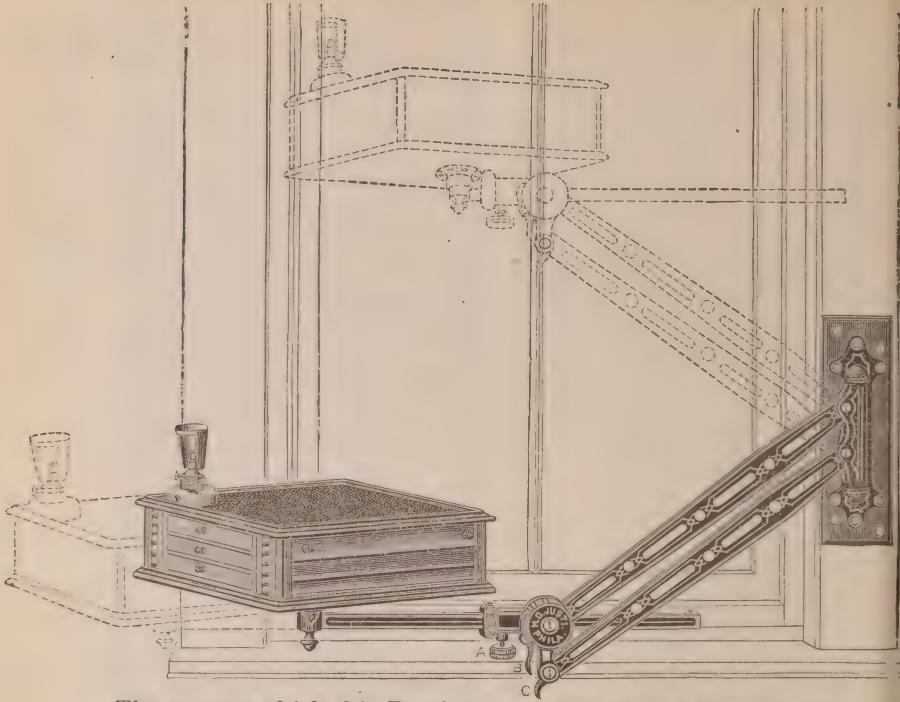
The HANDY BRACKET.



The success which this Bracket has achieved and the universal popularity and demand for it, has far exceeded our highest expectations; having made a number of improvements since its original introduction, we considered it essential to give a new illustration of it as it is now made, accompanied by the Grigg Table.

The Bracket being so well known and fully described before we deem it unnecessary to repeat, but wish only to add, that when we stated this Bracket to be one of the most convenient ever placed on the market, we were not wrong in our assertion, as its great sale has since demonstrated.

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Handy Bracket with Table No. 1, ...	$12,00
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FOR THE TREATMENT OF PULPLESS TEETH.

1. If possible, always adjust rubber dam, or usual method of keeping tooth dry. Never use a broach or drill in canal until treated with vaporizer.

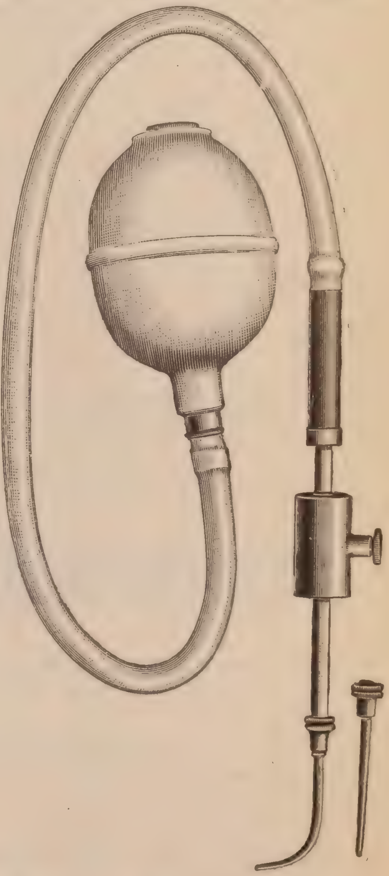
2. Clean out pulp chamber and expose openings of nerve canals; then introduce one of the points in opening of canal, and force the gas generated in the vaporizer into the canal until the root is saturated with the gas. Clean out canals thoroughly when possible, then treat again and fill immediately, if there is no indication of pus coming through the end of roots.

3. If there is a blind abscess in the tooth, stop up lightly with cotton and have patient return on third day. Three treatments will generally cure any case of blind abscess.

4. If there is a fistulous opening, try and force gas through same. One application is often all the case will require.

Open screw top on vaporizer and place small quantity of the iodoform (which accompanies each instrument) in chamber; then heat sufficiently, not too hot, to cause a thin stream of vapor to issue, on pressure of bulb, from point of vaporizer needle. Then insert in canal and force gas into same.

This gas will penetrate to every point in the canal and will absolutely destroy every vestige of animal life.



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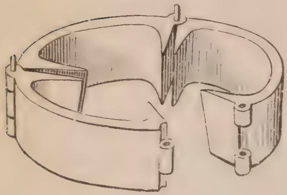

Fig. 2.

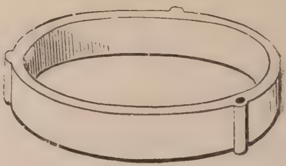

Fig. 3.

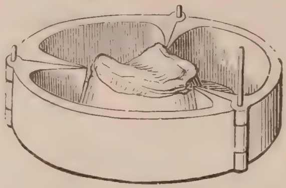

Fig. 1 represents the lower section of the Flask, slightly opened, to show the Joints. Fig. 2 is the upper section. When ready for use, the lower section is closed and confined by a Pin, and the Plaster Model placed in it, as represented in Fig, 3.

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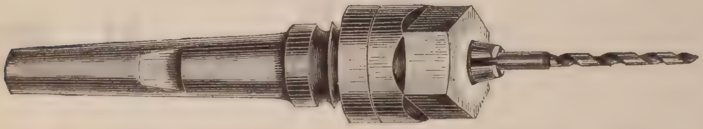

The above cut represents a very complete SELF-CENTRING, THREE-JAWED STEEL CHUCK, carefully made, durable and convenient. The wearing parts are hardened ; the jaws have a good bearing on the drill, and hold securely either a straight or tapered shank.

It carries Drills, Burs, or Corundum Points of the DENTAL ENGINE, one-eighth of an inch in diameter, and under, and made to fit our AMATEUR, UNITED STATES SHORT SPINDLE AMERICAN SHORT SPINDLE, and HAND and FOOT LATHES.

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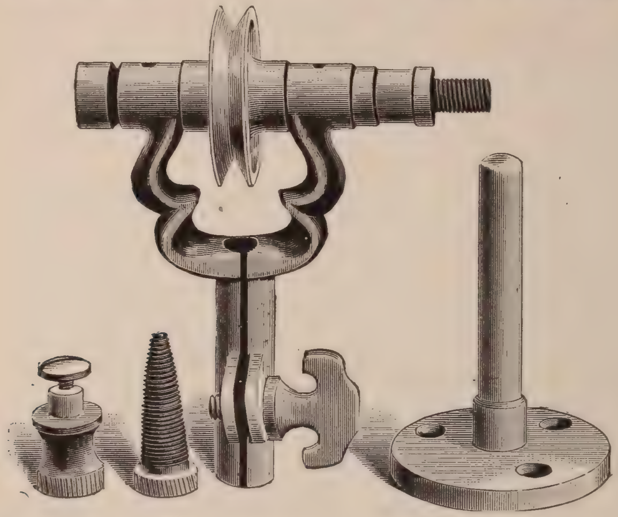

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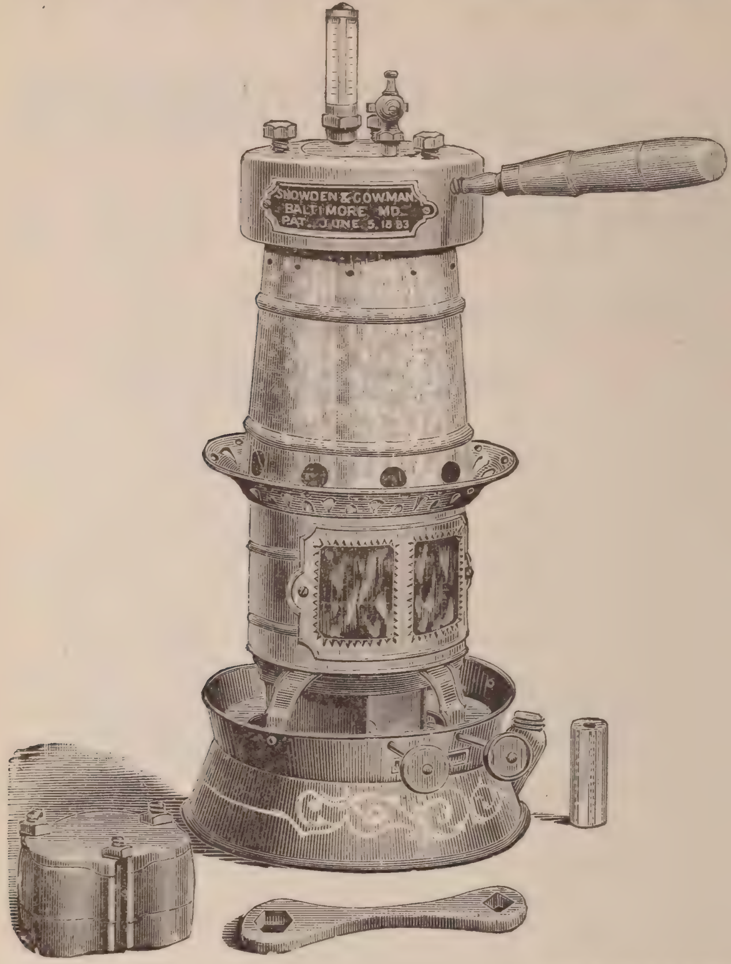

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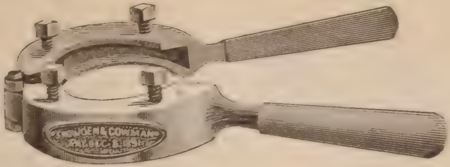

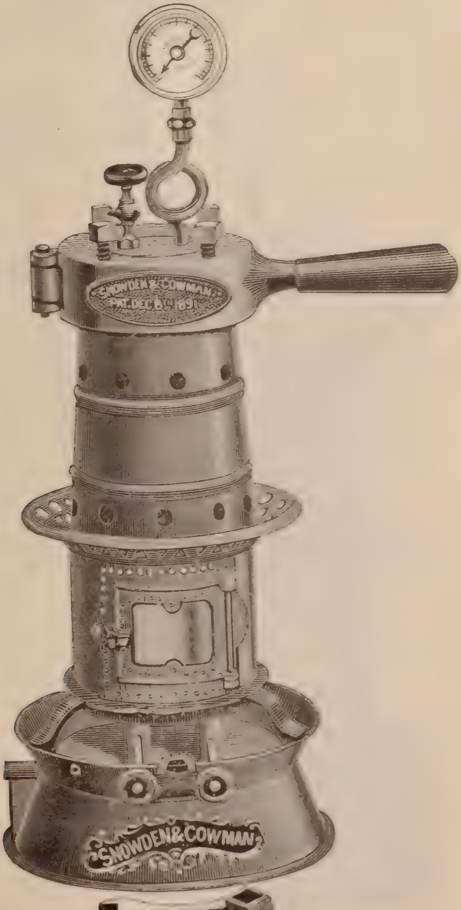

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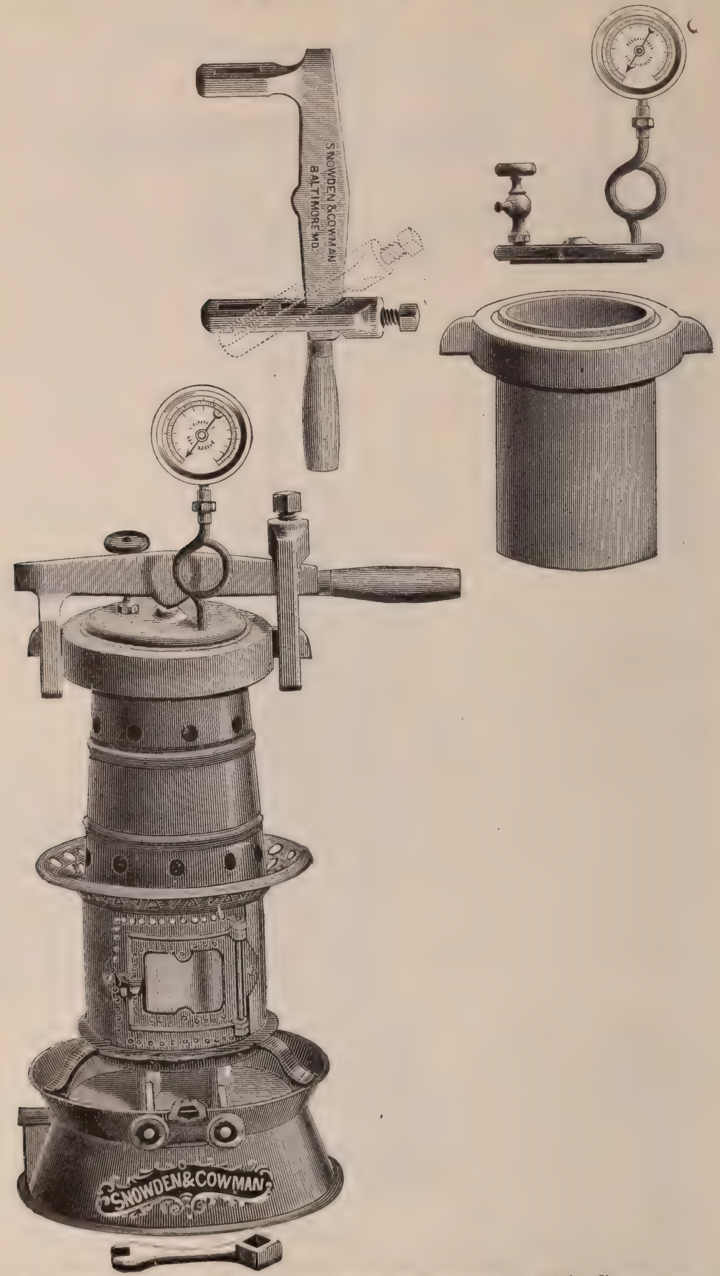

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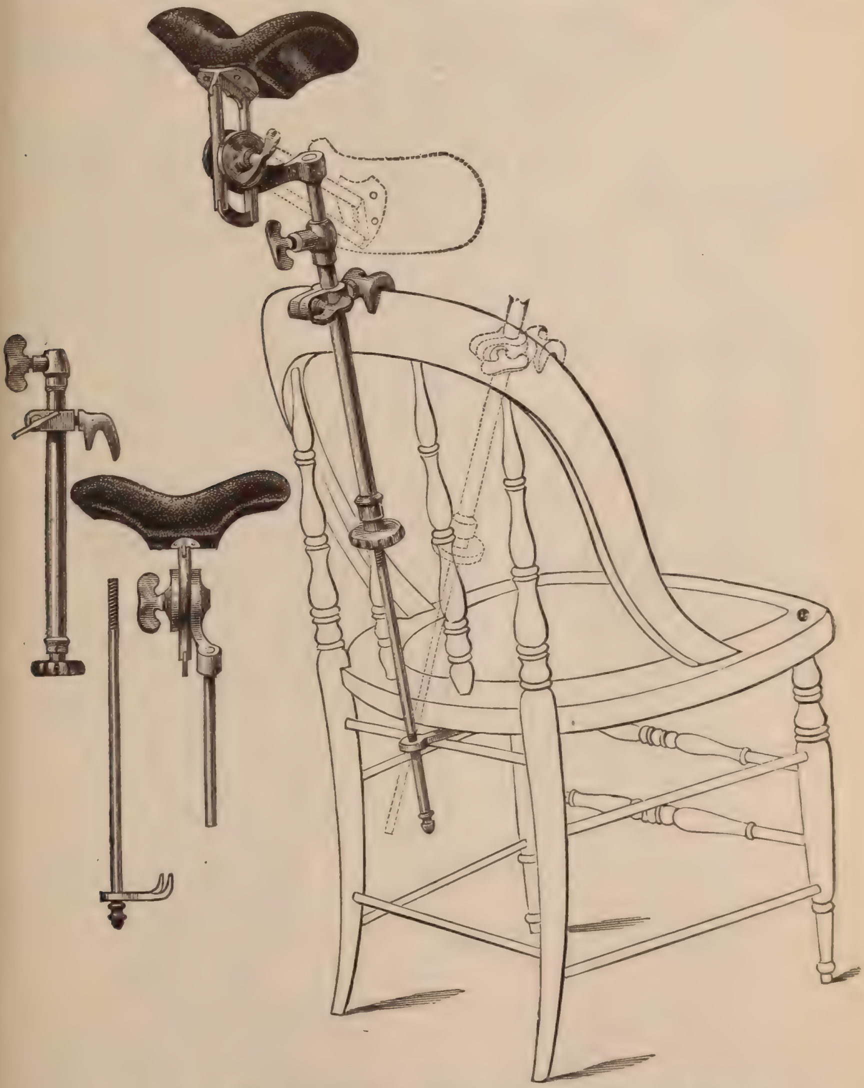

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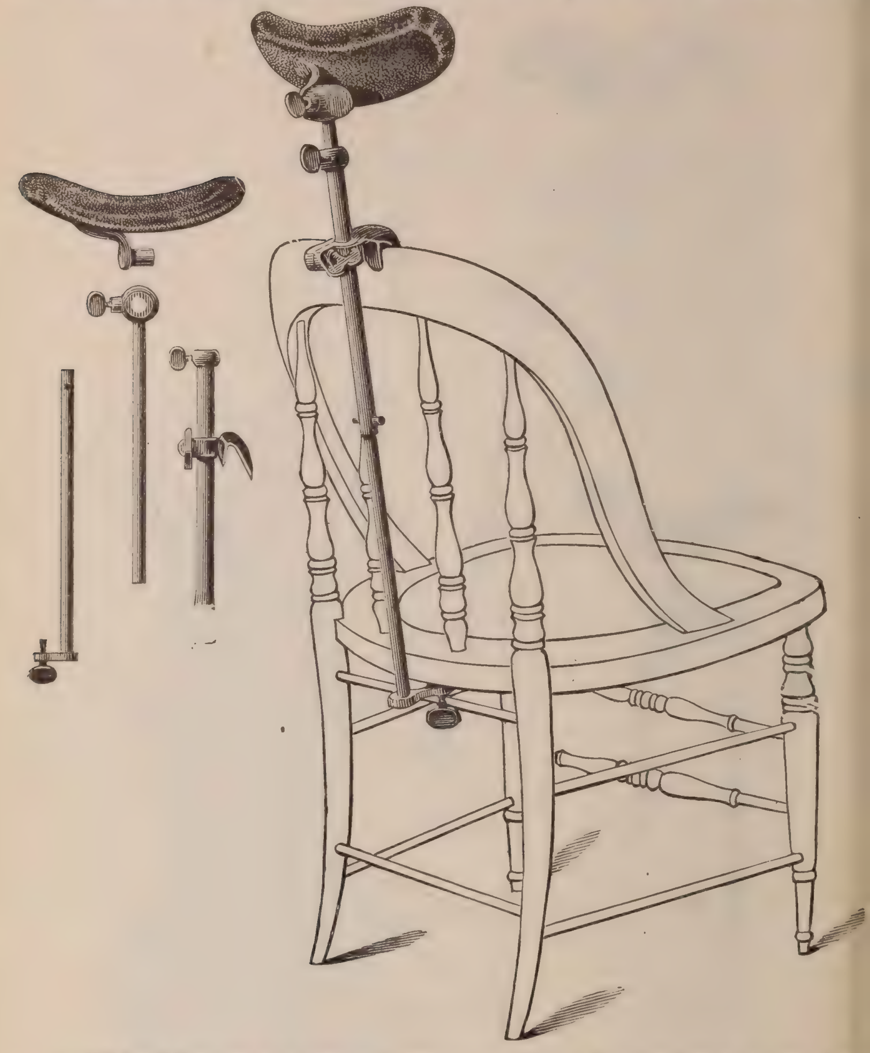

This Head-Rest can be attached to any chair, is very firm, and can be raised, lowered or moved backward or forward without interfering with attachment to the chair. Handsomely painted and bright parts nickel-plated.

It weighs only 4 lbs., and occupies a space only of 13 x 4 inches. PRICE, $4.50.

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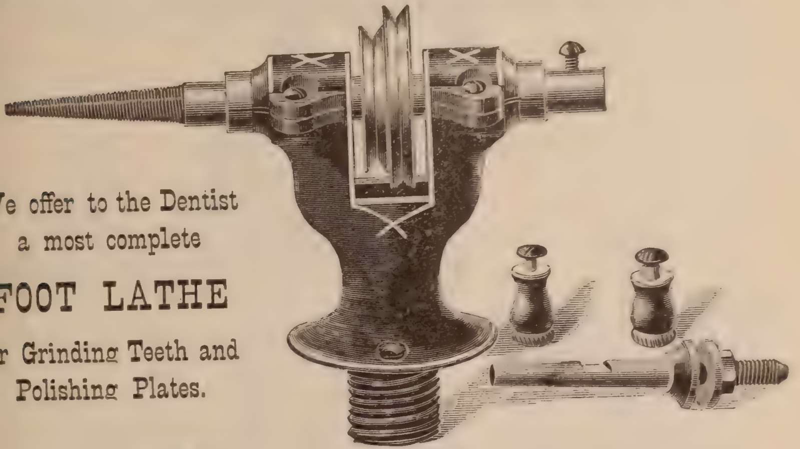

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FOOT LATHE

for Grinding Teeth and
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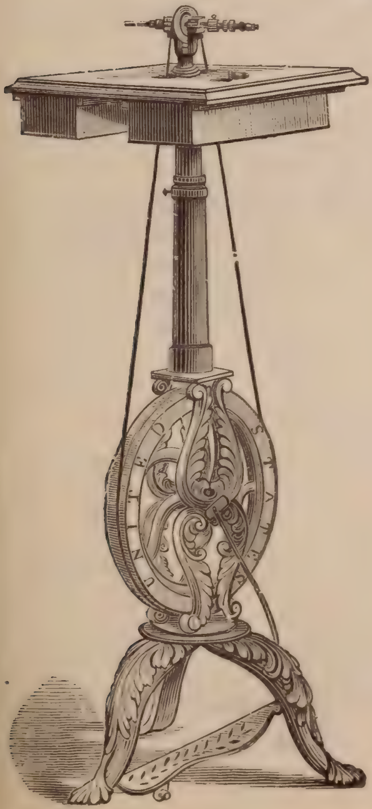

It has been gotten up in a superior manner, great care having taken to make it durable and efficient. It has a movable column and table, which is capable of being elevated eight inches, to accommodate the operator in either a sitting or standing posture.

It can be packed in a box sixteen inches square, and can be set up in a few minutes, presenting a very neat and pleasing appearance, suitable for the office or laboratory. It is finished in bronze, and runs very light and steady.

Price of Lathe complete with Short Spindle, as per cut,	$15.00
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Price of Stand only, including Cord and and Coupling,	11.00

Snowden & Cowman Mfg. Co.,

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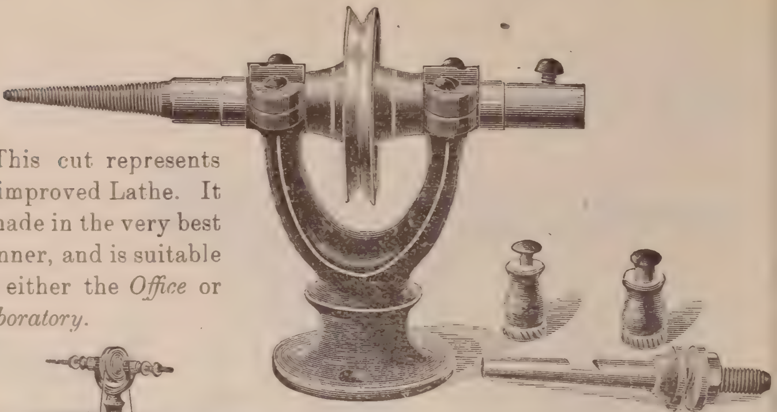
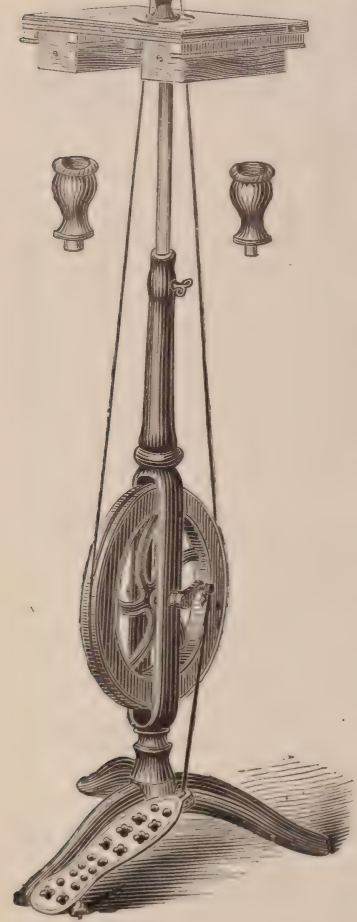
AMERICAN LATHE, PRICE REDUCED.



This cut represents an improved Lathe. It is made in the very best manner, and is suitable for either the *Office* or *Laboratory*.



It has a solid spindle, one end o' which is a taper screw for brush or felt wheels, and also, a space for a large corundum wheel. The other side of the spindle has a space for a large corundum wheel and a screw to receive the chucks, on which very small corundum wheels can be placed.

It has a movable column and table, which is capable of being elevated ELEVEN inches, to accommodate the operator in either a sitting or standing posture.

Either end of the spindle can be thrown towards the operator, if more convenient, by the set screw at the top of the column.

We also make for this Lathe a Socket Spindle—similar to our U. S. Lathe Short Spindle.

Price of Lathe, as per cut, with two Chucks, - - - -	$14.00
Price of Lathe, with Socket Spindle, with two Chucks, - -	14.00
Price of Lathe, with Extra Large Driving Wheel, - - -	15.00
Chucks, extra, - - - - -	.15

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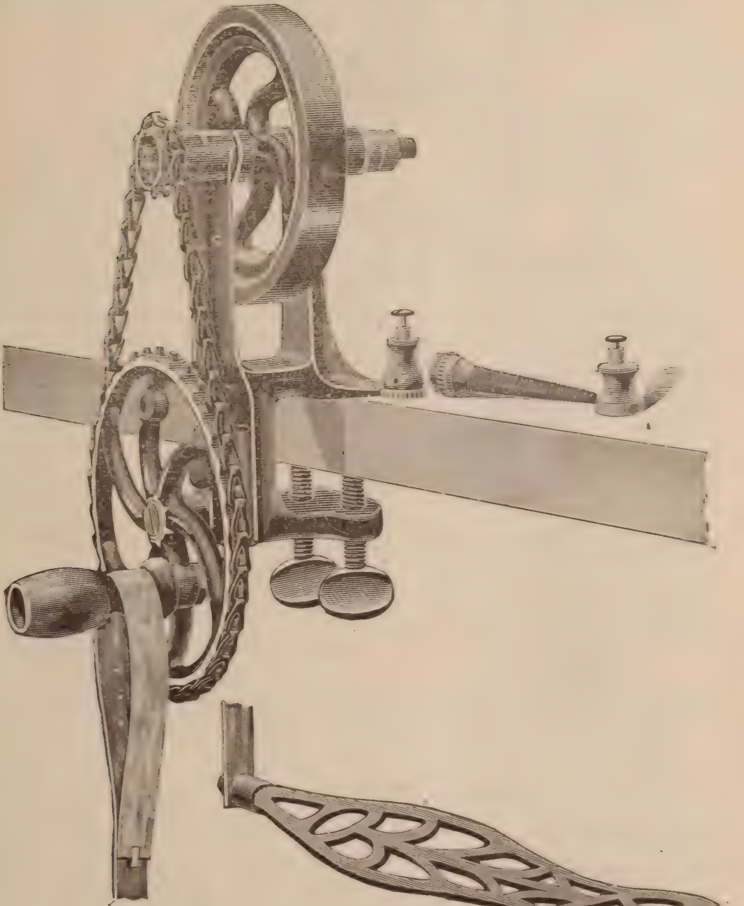
LINK CHAIN LATHE,

TO BE USED EITHER BY HAND OR FOOT POWER.

PRICE, - $7.00.



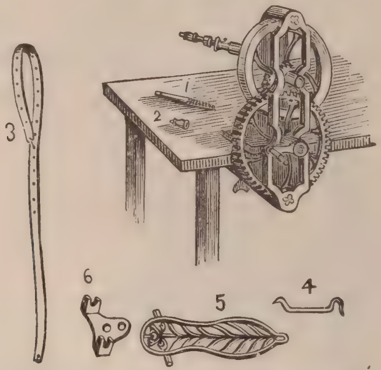
The Fly Wheel with Spindle is driven with an Endless Chain and makes very little noise, as it is propelled by large and small Sprocket Wheels, this gives it a very steady movement and does not require as much power as a geared lathe. It is fastened to table or bench by two Thumb Screws which make it impossible to turn when both are screwed up. It is very light and can be carried in a small satchell.

Snowden & Cowman Mfg. Co.,

9 W. Fayette Street, BALTIMORE, MD.

PRICE REDUCED.

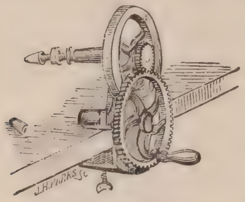
Portable Hand or Foot Lathe.



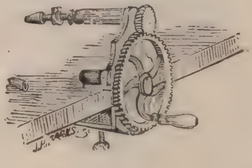
The above is a cut of a PORTABLE HAND OR FOOT LATHE, which is very efficient, manufactured for the traveling dentist; weighs under 7 pounds, and occupies the space of 6 by 9 inches. Members of the profession who have seen it pronounce it first rate.

Price, complete, - - - - -	$5 50
Without Foot Attachment, - - - -	5 00

Hand Fly Wheel Lathe.



Hand Lathe.



HAND FLY WHEEL LATHE.—It is intermediate between the Hand Lathe, and the Hand and Foot Lathe; it weighs only three pounds and is a first rate Lathe. - - PRICE, $4 50

HAND LATHE.—It is small, strong and durable, and weighs only two and a quarter pounds; we have sold a large number of these Lathes,—giving great satisfaction. - • PRICE $4 00

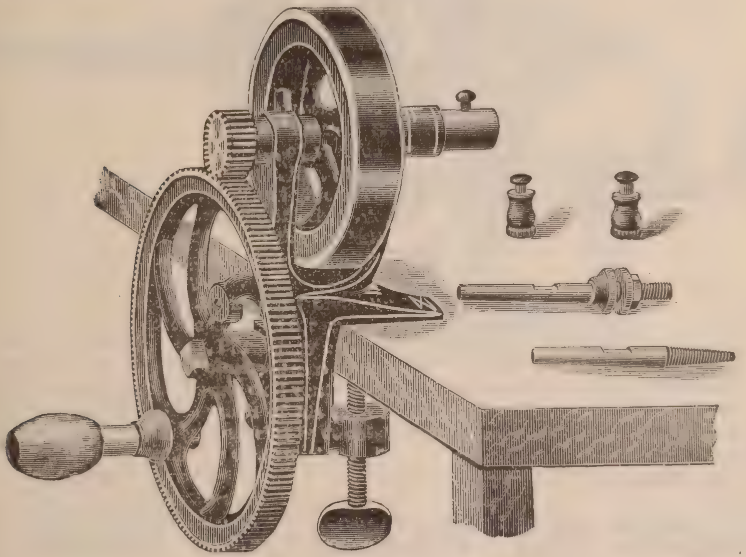
☞ All of the cog wheels of our Lathes are turned and cut on a machine, and are uniform, which makes them run true and with little noise.

SNOWDEN & COWMAN MF'G CO.,

No. 9 West Fayette St., Baltimore.

NEW HAND FLY WHEEL LATHE.

This Lathe is made larger and heavier and can be used with foot. It runs very steady and makes a good lathe for either Office Laboratory or to carry around. It is very neat.



PRICE, - - - - $5 00
" with Foot Attachment and Strap, 5 50.

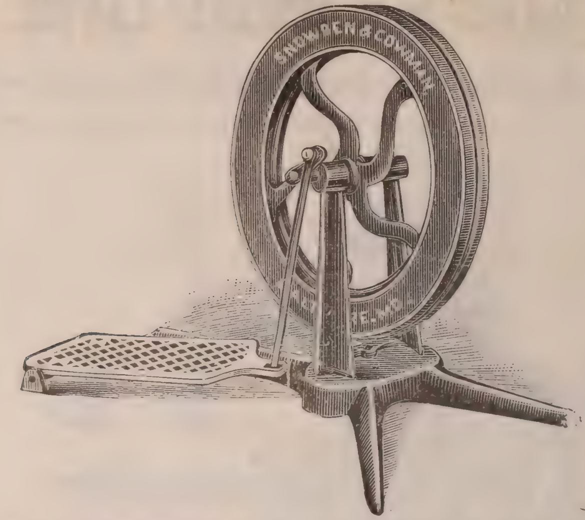
'The proof of the pudding is in the eating."

If the experience of dentists generally did not prove OUR GOLD AND PLATINA ALLOY a superior filling they would not be willing to pay nearly double more for it than the price of common amalgams. I suppose there is not another alloy or amalgam so generally used by our better class of dentists.

Welch's Alloy, 1 oz. $3.00; 2 oz. $5.50, 4 oz. $10.00; 10 oz. $22.00.
Welch's Amalgam, 1 oz. $2.00; 2 oz. $3.50; 4 oz. $7.00; 10 oz. $15.00.
Welch's Oxiphosphate, large $1.50; medium $1.00.
Liquids or powders, large 75 cts.; medium 50 cts.

T. B. WELCH, - - - - Vineland, N. J.

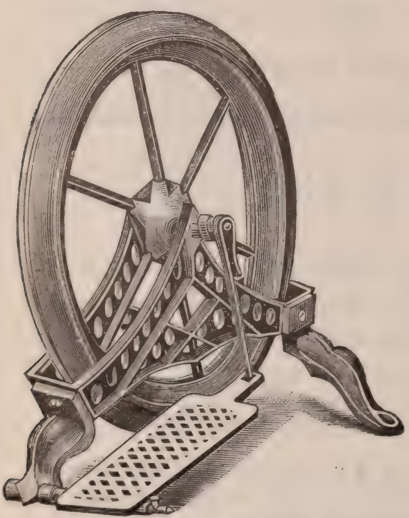
FLY WHEEL, No. 1, NEW.—Price Reduced.



This Fly Wheel weighs 30 lbs., with diameter of wheel 15 inches. The stand is the stiffest and steadiest of any driving wheel in the market. Owing to the position of the feet and the peculiar arrangement of the treadle, the wheel has an immense power and is very light running. In boxing remove pin that connects treadle with rod and fold treadle by side of the wheel. Weight complete, 46 lbs.

Price Boxed, - - - - - - **$7.00**

DIAMOND FLY WHEEL.—Price Reduced.



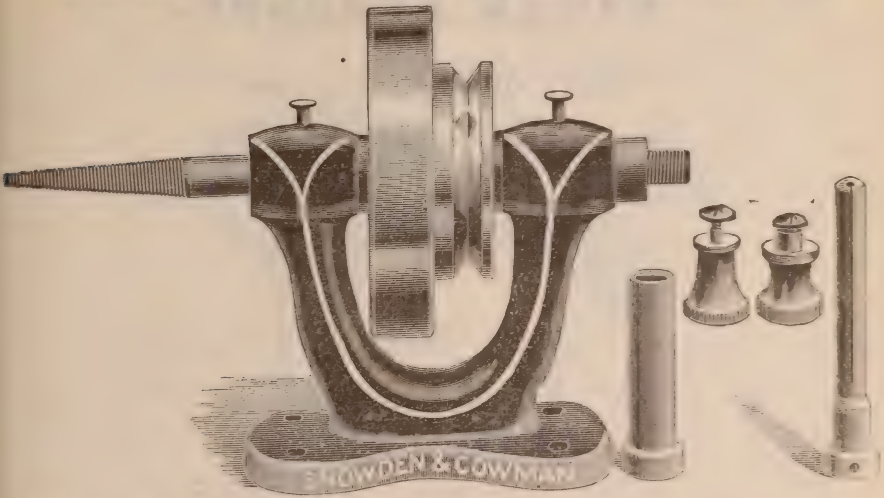
This fly-wheel is eighteen inches in diameter, with wrought iron spokes, in an iron frame, complete in itself, can be set any where, and runs very steady.

It has sufficient power and speed for any Dentist's Lathe Head. The feet are easily detatched, and all can be packed in a smaller box than any other Fly Wheel of its dimensions in the market.

Price Boxed, - - **$7.00.**

SNOWDEN & COWMAN MFG. CO.,
No. 9 W. FAYETTE STREET,
Baltimore.

OUR NEW LATHE HEAD.

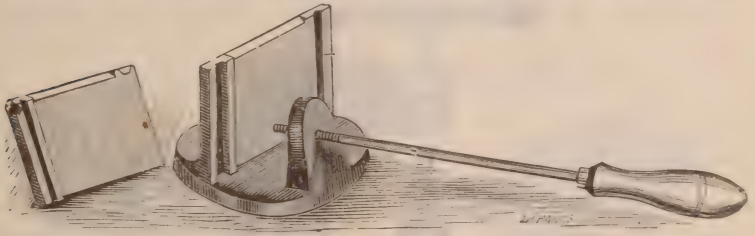


VERY SIMPLE AND EASY RUNNING.
ADJUSTMENT QUICKLY MADE.
VERY DURABLE AND STEADY.

PRICE WITH 4 CHUCKS, - - - $5.00.

SNOWDEN & COWMAN MFG. CO.'S

INGOT MOULDS.



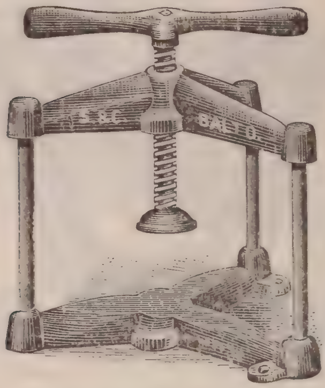
No. 1, will cast a plate from one half of an inch to two inches in width, also a round, half-round and square bar. -	$2.25
No 2, will cast a plate from one half of an inch to two and three quarter inches in width, also a round, half-round and square bar. - - - - - -	$2.75
No. 3, will cast a plate 3 inches wide and 4 inches long also round, half-round and square bar, -	$3.25

LIBERAL DISCOUNT TO THE TRADE.

Snowden & Cowman Mfg. Co's

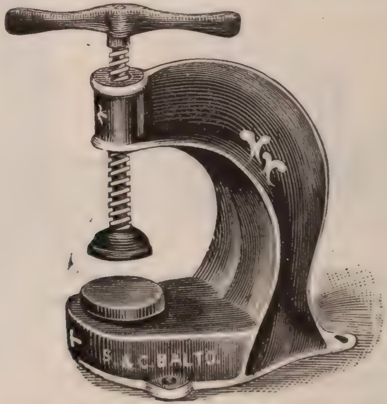
Flask Presses.

No. 1. Old Style Improved.



This Press is intended to close the flask after packing with rubber. It is of great advantage, saving screws and flasks. The upright rods are of wrought iron and the handle of the screw can be detached. They are *well made* and *very strong*, and has been made larger, so that it will take any Flask in the market. Price, - - - - $1.50.

No. 2, New Style.



This Press is made of cast iron, very heavy, with steel screw and detachable handle. It has a Pivot Plate to level up the flask, insuring always a central pressure on the flask ; will take any flask in the market. Price - - $1.50

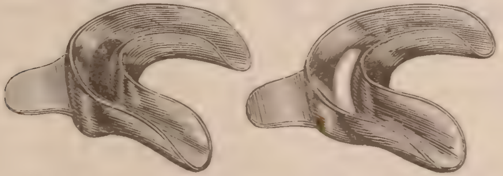
BRITANNIA IMPRESSION CUPS

LONG HANDLES.

We Manufacture the following Sizes and Varieties·

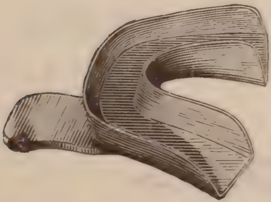
UPPER, Nos. 00, 0, 1, 2, 3, 4, 5, 6, 7.—(No. 00 is the largest size.)
LOWER, " 1, 2, 3, 4, 5. —(No 1 is the largest size.)

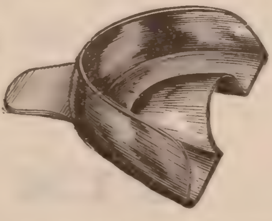
PARTIAL LOWER CUPS.



ENCLOSED CAVITY, Nos. 9, 10, 11.—(No. 9 is the larges size.)
OPEN CAVITY, Nos. 6, 7, 8. —(No. 6 is the largest size.)

UPPER AND LOWER CUPS.





PARTIAL UPPER—Flat Bottom, Nos. 8, 9, 10, 11—(No. 8 is the largest.)
FULL LOWER— " " " 12, 13, 14—(No. 12 is the largest.
PRICE............................Each....................25cts

SNOWDEN & COWMAN MFG. CO.
9 West Fayette Street, Baltimore Md

Dental Depot,

ESTABLISHED 1856.

SNOWDEN & COWMAN MFG. CO.

MANUFACTURERS OF

Lathes, Head Rests, Vulcanizers, Impression Cups, &c.

AND DEALERS IN

DENTISTS' MATERIALS,

No. 9 W. Fayette St., between Charles & Liberty Sts

BALTIMORE.

GOLD FOIL.

	Per 2 oz.	oz.	½ oz.	¼ oz.	⅛ oz.
Abbey & Sons,		$32.00	$16.00	$8.00	$4.
Valleau's		30.00	15.00	7.50	4.
Ney & Co's.		29.00	15.00	7.50	4.
S. S. White's, ¼ Century,	$58.00	30.00	15.00	8.00	4.
" " Globe,	58.00	30.00	15.00	8.00	4.
" " 1000 Fine,	58.00	30.00	15.00	8.00	4.
R. S. Williams, Cylinders, A,		30.00	15.00	8.00	4.00
" " " B,					
" " Rect. Pellets,					
" " Standard,					
Watt's Crystal,		32.00	16.00	8.00	4.00
E. Rowan & Co.		29.00	15.00	3.20 per 1-10 oz.	
" untrimmed,				5.60 per 1-5 oz.	
"				2.90 per 1-10 oz.	

TIN FOIL.

Ney & Co's--Nos. 4, 6, 8, and 10, - -	40 Cents per Book
S. S. White's, - - - - - - -	30 " " "
Nos. 4, 6, 8 & 10, (extra tough)	40 " " "

SNOWDEN & COWMAN MFG. CO.,

No. 9 West Fayette Street Baltimore

PORCELAIN TEETH.

GREATLY REDUCED.

We keep on hand a large assortment of Teeth of the following Manufacturers, which we

SELL AT THEIR REDUCED PRICES.

The S. S. White Dental Manf. Co.'s

	Each.	$10 lots.	$25 lots.	$50 lots.	$100 lots.	$300 lots.
Plain Rubber & Plate Teeth	.12	.11½	.11	.10	.09	.08
Gum Sectional Rubber, Plain Plate, long Pins, Single Gum Rubber and Gum Plate Teeth,	.12½	.12	.11½	.11	.10	.09

H. D. JUSTI & SON'S.

	Each.	$10 lots.	$25 lots.	$50 lots.	$100 lots.	$300 lots.
Plain Rubber and Plate,	12.	.11½	.11	.10	.09	.08
Gum Sectional Rubber, Plain Plate, Single Gum Rubber and Gum Plate,	.12½	.12	.11½	.11	.10	.09

Sibley's or Wilmington Co.'s Gum or Plain Teeth.

Per Set 14	Gum or Plain,	$ 1 00
11 Sets,	" " "	10 00
29 "	" " "	25 00
60 "	" " "	50 00
125 "	" " "	100 00

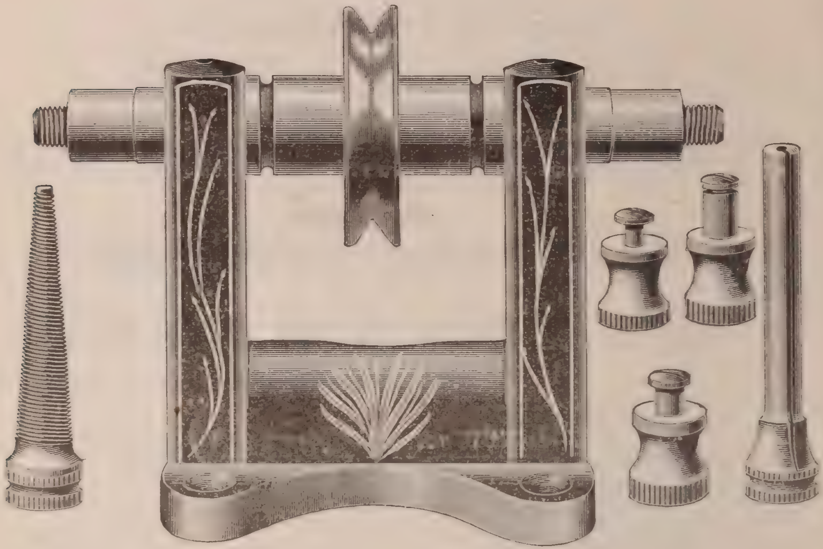
Less than Set of Fourteen Eight Cents per Tooth.

SNOWDEN & COWMAN MFG. CO.

DENTAL DEPOT

No. 9 W. Fayette Street.

NEW MODEL LATHE HEAD.



THIS ILLUSTRATION REPRESENTS ABOUT ONE-HALF SIZE OF THE HEAD. IT RUNS VERY SMOOTH AND LIGHT AND IS VERY SIMPLE. IT CAN BE RUN BY ANY DRIVING WHEEL.

Price with Five Chucks, as Represented, - $4.75.

SNOWDEN & COWMAN MFG. CO.,

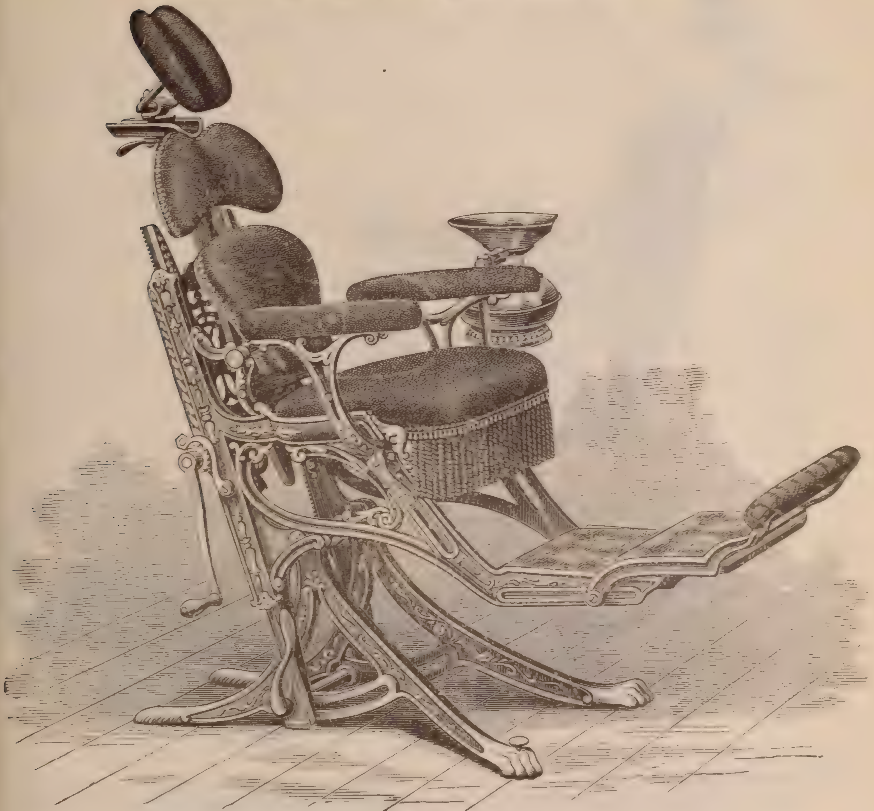
DENTAL DEPOT,

9 West Fayette Street,

TRADE SUPPLIED. BALTIMORE, MD.

THE MORRISON DENTAL CHAIR.

Reissue May 15, 1877. English Patent Dec



PRICES.

In best quality Green or Garnet Plush or Plain Morocco	$100.00
In Real Morocco, Embossed	110.00
In finest quality Green or Garnet Plush, puffed and trimmed with Silk Plush, full Turkish Upholstery	120.00

The Illustration shows No. 4 Spittoon, No. 3 Bracket, No. 3 Socket, which are extra and add $8.00 to above price.

BOXING FREE.

STUDENT'S MORRISON CHAIR.

To meet an often-expressed want of a first-class chair at a low price, the Student's Morrison was brought out. It is, in all respects, equal to the regular Morrison chair, except that it is upholstered in a seal-brown corded material, instead of a plush. It presents a very neat appearance, and will wear nearly as well as plush.

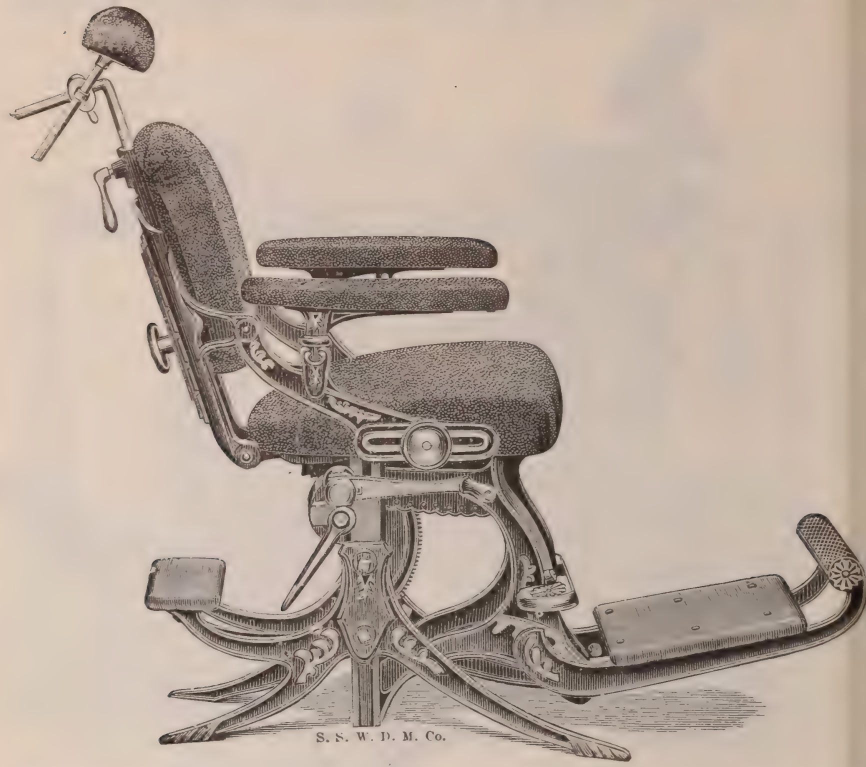
PRICE.

In Corded Upholstery.	$ 85.00

We supply either style of the Morrison Chair, with or without Casters When ordered with Casters, the price is $10.00 extra.

For Sale by Snowden & Cowman Mfg. Co., 9 W. Fayette St., Baltimore.

THE CYCLOID CHAIR



Patented December 28, 1875; July 3, 1877; November 20, 1877; March 9, 1880; May 22 1883. Re-issues July 4, 1876; March 19, 1878; August 27, 1878. Others pending.

This Chair was designed especially to meet a demand for a chair which, while affording a variety of essential movements, could be sold at a lower price than the Wilkerson, The S. S. White Pedal-lever, or the Morrison.

For those who want a low-priced chair which in facility of movements far surpasses anything heretofore offered for the money, the Cycloid is *the* chair. It is strongly built, and the finish and general appearance make it a desirable addition to a well-furnished office.

The lifting mechanism, which has a range of 10 inches, is entirely new and is worked with great ease and rapidity. Should the crank by accident slip from the hand the descend of the Chair is automatically arrested.

The arms are so arranged that they may be rotated out of the way of the operator and yet be of service to the patient.

The foot-board can be adjusted in four positions, and a permanent support for the foot of the operater is placed at the back of the base, the convenience of which will be obvious to those who are in the habit of using a "cricket."

Nearly all of the movements can be made with one hand while standing at the side of the Chair.

Price, upholstered in Corded Materia.,	$ 70 00
" " Best Quality Maroon or Green Plush,	85.00

For Sale by SNOWDEN & COWMAN MFG. CO.

Snowden & Cowman Mfg. Co.'s

DENTIST'S CASE BOOKS,

For Recording all Operations in Dentistry

WITH

TITLE PAGE, INDEX or ALPHABET, and the pages numbered, printed on fine paper with a DIAGRAM of the teeth at the top of each page, neatly and substantially bound in muslin.

PRICES.

One Quire Book, - - - - - - -	$1 00
Two " - - - - - - - -	1 75
Three " - - - - - - - -	2 50
Four " - - - - - - - -	3 25

DENTIST'S BILL HEADS.

These Bill Heads are printed on fine paper with diagram of the teeth on each, in the following sizes:

No. 1.—Size, 8½ inches wide by 7 inches, Price per 100, - -	$ 30
No. 2.—Size, 4½ inches wide by 7 inches, " - -	40
No. 3.—Size, 8½ inches wide by 7 inches, " - - -	40

JOB PRINTING.

Having fitted up a Printing Office in our establishment, we are prepared to fill at the very shortest possible notice, orders for various kinds of Printing, such as

CIRCULARS, BILL HEADS, NOTE HEADS,
STATEMENTS, HEADINGS, LABELS,
ENVELOPES, CARDS, &C.

☞ Liberal Discount to the Trade.

PUBLISHERS OF

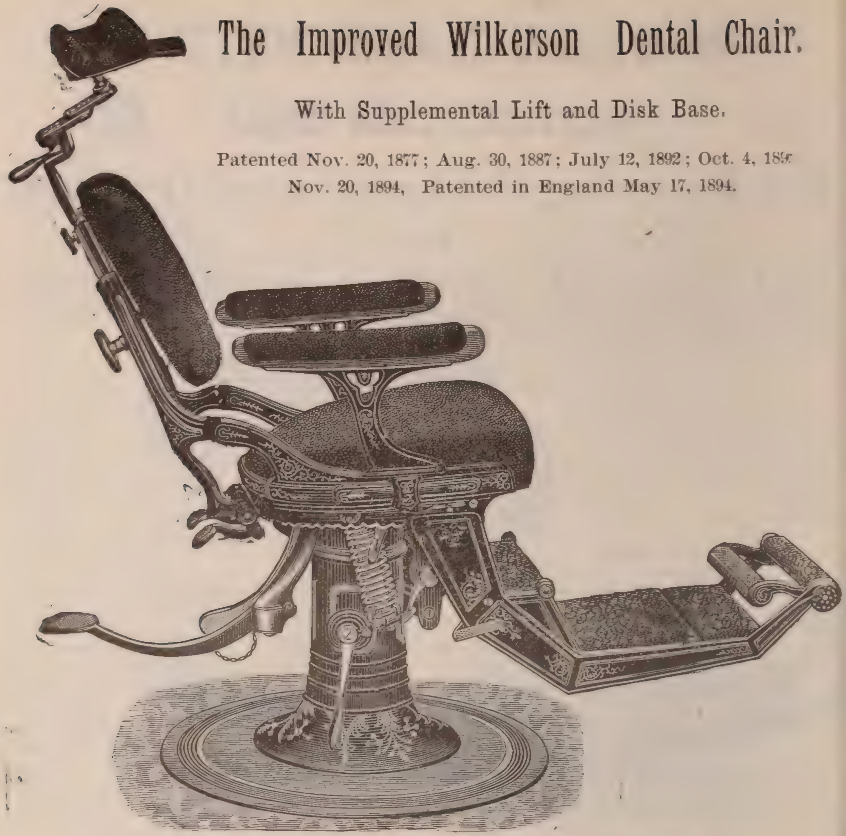
The American Journal of Dental Science,

$2.50 PER YEAR.

The Improved Wilkerson Dental Chair.

With Supplemental Lift and Disk Base.

Patented Nov. 20, 1877; Aug. 30, 1887; July 12, 1892; Oct. 4, 189
Nov. 20, 1894, Patented in England May 17, 1894.



LOWEST POSITION OF THE CHAIR.

Supplemental Lift for the Wilkerson Chair.

One of the most difficult problems in the production of a first-class dental chair has been to obtain the great range of vertical adjustment which is desirable to meet the needs of the dentist without incurring one or more objectionable complications, such as the cutting of the floor of the operating-room or the telescoping of the supports.

The Supplemental Lift, when placed upon the Low or Medium-Base Wilkerson Chair, enables us to meet this problem in a more satisfactory manner than anything hitherto offered.

When placed intermediate between the regular plunger elevating device and the body or frame of the chair, it is possible to lift the chair, before the patient steps in, either five or ten inches, after which the treadle elevating apparatus may be used, as before, thus in fact increasing the vertical range of the chair by the amount of the adjustment mentioned, ten inches.

The operation of the apparatus is simple, the weight of the chair body being almost perfectly balanced by springs, so that it may be raised five inches to the first notch; or through the entire range of ten inches, by lifting by the chair arm.

PRICES. The supplemental lift adds twenty-five dollars to the prices of the Disk Base chair as given on the opposited page.

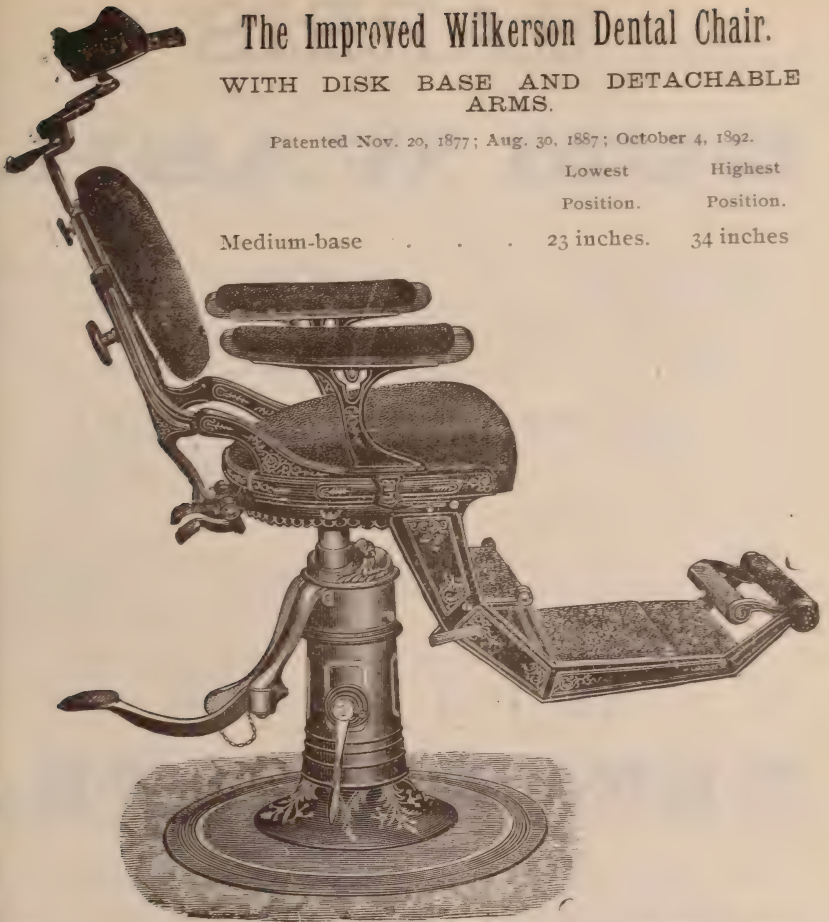
For Sale by Snowden & Cowman Mfg. Co.,
9 West Fayette Street, Baltimore.

The Improved Wilkerson Dental Chair.

WITH DISK BASE AND DETACHABLE ARMS.

Patented Nov. 20, 1877; Aug. 30, 1887; October 4, 1892.

	Lowest Position.	Highest Position.
Medium-base	23 inches.	34 inches



To accommodate those who prefer the Disk Base we have added to our line of dental Chairs the Wilkerson in this style, as shown in the cut, and we are now ready to furnish the *medium range* Chair on the Disk Base.

The high and low range Chairs with Disk Base are now in process of manufacture and will soon be ready for delivery.

Prices of the Wilkerson Chairs, with either Disk or Leg Base, are the same.

In ordering chairs be particular to state if Disk Base is wanted ; if not specified, the regular form will be sent.

PRICES.

	Medium Bas
In Best Quality Green or Maroon Plush	$150.00
" Maroon Plain Turkey Morocco	150.00
" French Finish Maroon-colored Leather	150.00
" Seal	157.00
" Best Quality Green or Maroon Plush, puffed with Plush, trimmed with Silk Cord, with Wilton Capet .	170.00
" Embossed Turkey Morocco, puffed with plain Morocco, edged with Cord, with Carpet to match . .	180.00

Watkins Sectional Head-Rest adds ten dollars ($10.00) to the above prices.

BOXING FREE.

For Sale by SNOWDEN & COWMAN MFG. CO.,
9 West Fayette Street, Baltimore.

HARRIS'

GUM WASH.

This very pleasant and efficient Lotion has been found highly beneficial when applied to diseased gums after removing the causes of irritation; and in cases where teeth are sensitive from cold or the receding of the gums. Also, applied after extraction it allays pain and irritation.

NEATLY PUT UP IN THREE OUNCE BOTTLES.

3 oz. Bottles, each,	$ .25
3 oz. Bottles, per dozen,	2.75

Made from Formulae prepared by Dr. Chapin A. Harris and has been on the market for the past thirty-two years and endorsed by every dentist who has used it.

WELCH'S

NERVE PASTE.

This preparation is very certain in its action on the nerve, destroying it in less than twenty-four hours. It has the advantage of not causing pain or producing inflammation, with very rare exception. Also, it may be used with safety in cases of toothache that proceed from exposed nerve, and seldom fails to give relief in from five to twenty minutes.

Directions.—Place a portion, of the size of a pin's head, in *immediate contact* with the exposed nerves, covering it carefully with wax, allowing it to remain twenty-four hours. A very minute portion placed in a cavity, in preparation for filling, will destroy its sensibility in four to six hours. The bottle contains sufficient for two hundred applications.

N. B.—If the paste should become dry, moisten it with creosote, or warm it until it is quite soft.

☞ If, after twenty-five applications, it does not give satisfaction, return the Nerve Paste and we will return the price.

For Sale by SNOWDEN & COWMAN MFG. CO.,
9 West Fayette Street.

FORCEPS.

We keep in stock a large line of selected forceps made from best quality of steel. Nickle Plated, Octagon Joint. Price per pair, -	$2.25

Can supply any make or number from any catalogue at manufacturers' prices.

EXCAVATORS.

Octagon, Steel Handles, best quality, per dozen, nickel plated, -	$2.00

ARTICULATORS.

From - - - -	.90 to $4.00 each

RE-DISTILLED MERCURY.

Put up in four ounce vials, - - - -	each .50

MODELLING COMPOSITION.

S. S. White's 1, 2, 3, 4, per pound, - - -	75
Hood & Reynold's 0, 1, 2, 3, per pound, - -	75

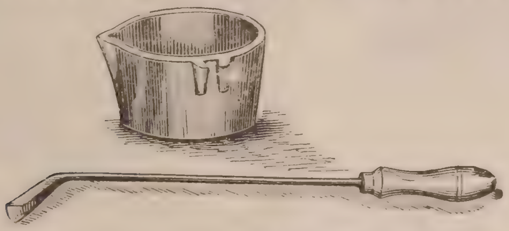
GUTTA-PERCHA FILLING.

The S. S. White M'f'g. Co's Pellets, per ounce, - -	$4.00
Put up in boxes containing ½, ¼, 1-10, 1-20 ounces.	
Caulk's Diamond Pellets, per ounce, - - - -	$2.00
Put up in boxes containing 1-4, 1-8 and 1-16 ounces.	

FOWLER'S TEMPORARY STOPPING.

Price per ounce, - - - - - -	.50

Ladles and Handles.



We make three sizes of Ladles; one handle will fit each Ladle, and is removed when the Ladle is placed on the fire.

No. 1, is 5 inches diameter, and 3 inches deep.
" 2, " 4¾ " " " 3 "
" 3, " 4½ " " " 2½ "

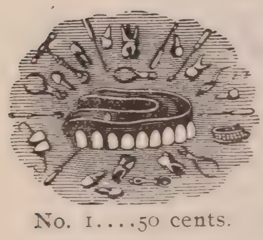
PRICE.—2 Ladles, (Nos. 2 and 3,) with 1 Handle	75
Nos. 2 and 3 Ladles, without handle, each	25
No. 1 large " " " "	40
Handles of wrought iron, each	25

SNOWDEN & COWMAN MFG. CO.,

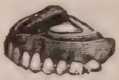
No. 9 W. Fayette St., Baltimore

Dental Cuts---Electrotypes.

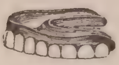
For Business Advertisements.



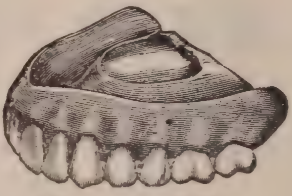
No. 1....50 cents.



No. 7.....30 cents.

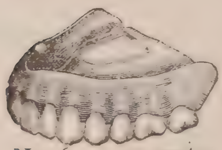


No. 4.....30 cents.



No. 2....50 cents.

No. 3....30 cents



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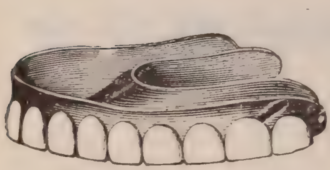

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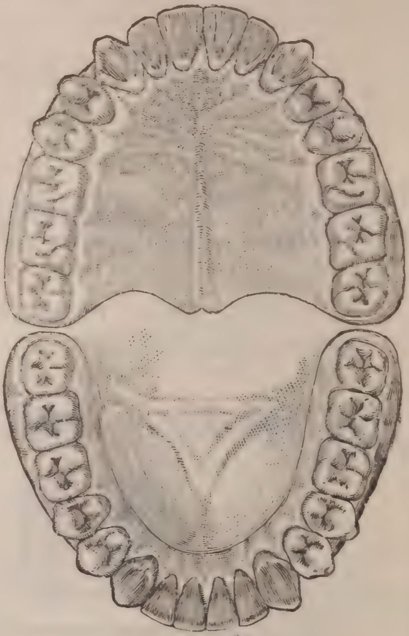

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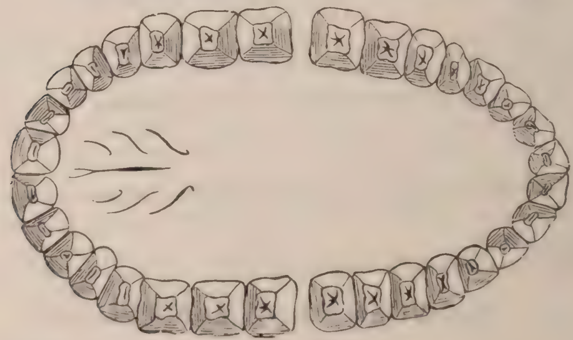

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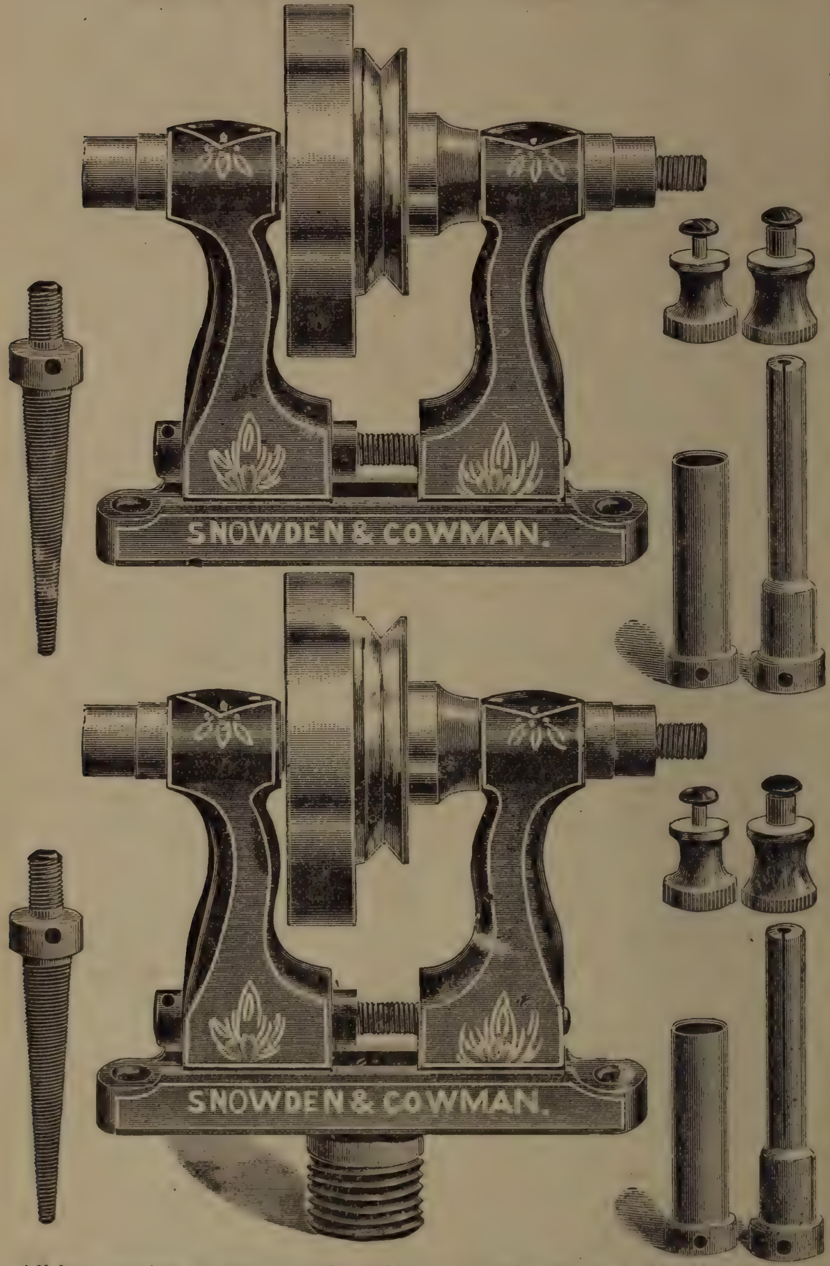
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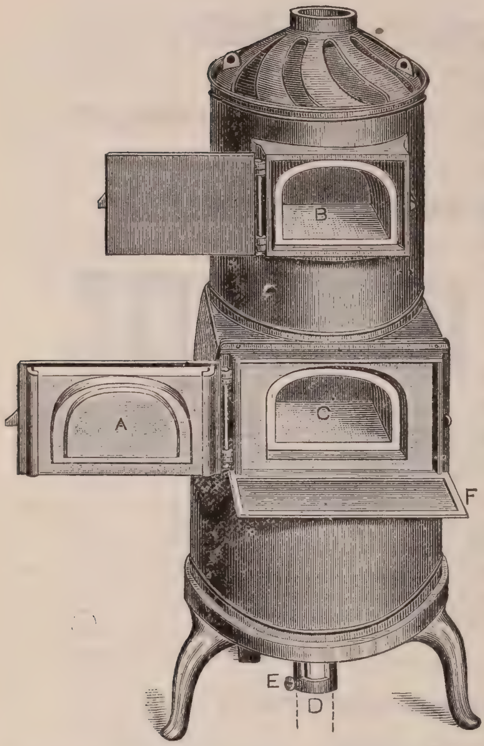

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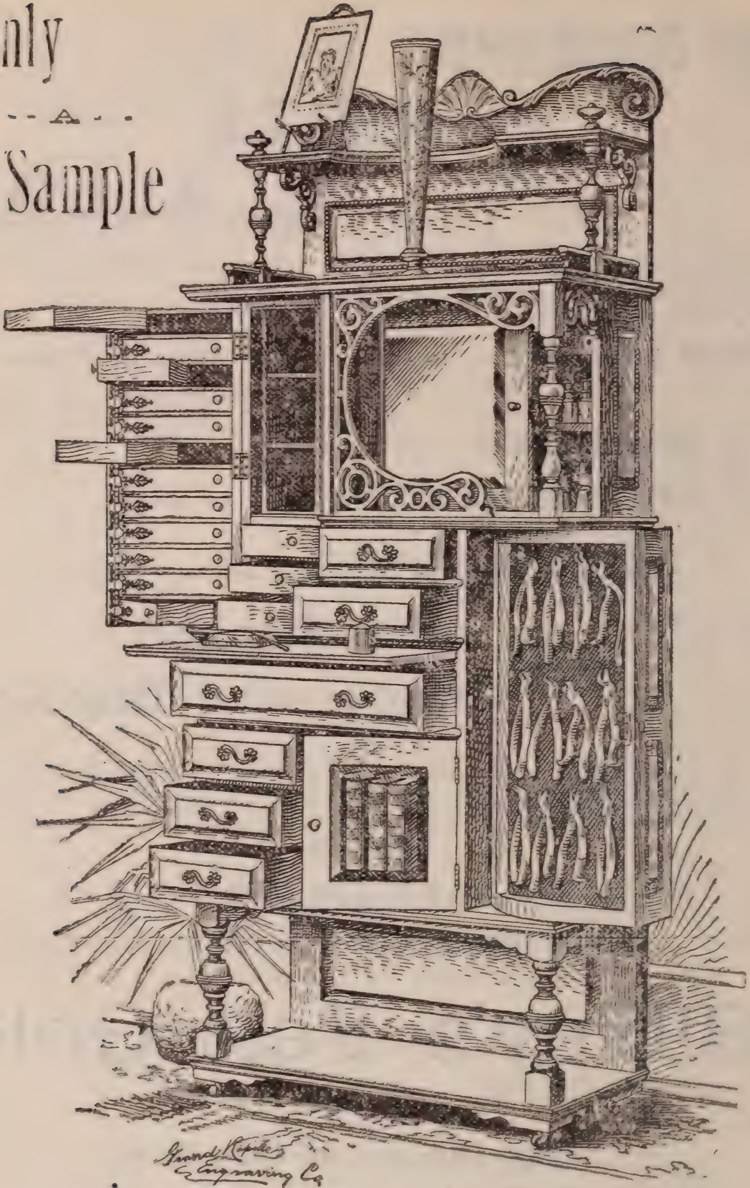


No. 75 Cabinet Patented Dec. 4th. 1894.

of our line of Dental Cabinets, but its our best seller. Quartered Oak, lined with Mahogany, bright gilt trimmings, beautiful when closed, convenient when open. **$75.00.**

Our cabinet circular will show you many styles, and its had for the asking.

The Ransom & Randolph Co.,
Dental Depot,
Toledo, OHIO.

It is not so much

how much you pay for materials, it is what you get for what you pay. The dentist who uses . .

CAULK'S

Alloys, Cements and Gutta Parchas

gets what he pays for—gets his moneys worth. . . . .

FOR SALE EVERYWHERE.

L. D. CAULK,

1831-33 Chestnut Street, PHILADELPHIA, PA.

Artificial : : : :

. : . : . TEETH.

TO THOSE dentists who have for many years used and approved the teeth bearing the stamp of H. D. Justi, it might seem unnecessary to further advertise them, but for the information of the great number of young men who are annually entering the ranks of the Dental Profession, we wish to call attention to a few points in which we claim superiority for these teeth over all others : . .

IN FORM these will excel both in variety and in close imitation of nature, not only in her ordinary average styles, but also in what might be called her eccentricities of form and arrangement. . .

IN COLOR we have succeeded in most nearly securing that bony texture which is so distinct from the porcelain-glitter we see in so many artificial teeth, and in the delicate blending of the shade they are eminently satisfactory. . . . .

IN STRENGTH they have the highest degree possible consistent with maintaining the other qualities required. It would be quite possible to make teeth much stronger by disregarding beauty of form, and making a coarse, thick block, but this ought to be, and doubtless would be, at once rejected by both dentist and patient. . . .

IN ADAPTATION to the alveolar ridge, great care has been taken to meet every requirement, and finally we ask for the product of our factory only a careful criticism and fair trial to convince the profession that we are fully justified in the superiority we claim for it.

H. D. Justi & Son,

PHILADELPHIA,
1301 and 1303 Arch Street.

CHICAGO,
66 Madison Street.

MADE IN U. S. A.

H. D. JUSTI & SON'S SAMPLE SHADE HOLDER.

Patent Nov. 10th, 1896. Patent Applied For.

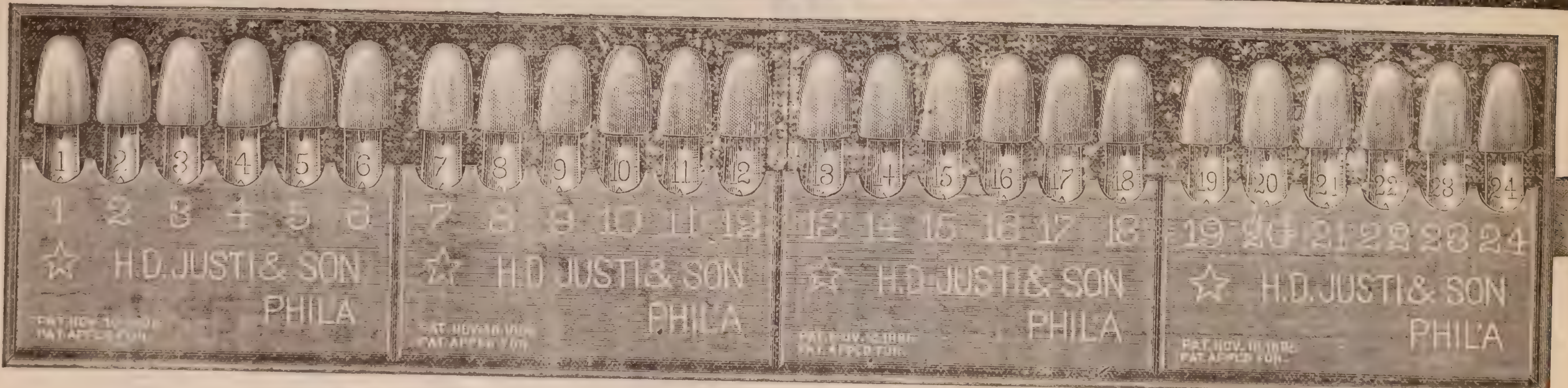
PHILADELPHIA. BRANCH, CHICAGO.

The **originality** of our Porcelain Teeth in regards to **shape, strength** and **natural blending of colors** is too well known throughout the world to need any further comment.

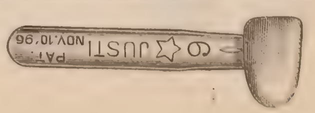
This holder is made in four sections and each tooth can be separately withdrawn and used in desired positions A convenience which heretofore has never been offered to the profession.

Our assortment of shades is endless from light to dark in all shadings. From experience in selecting shades we think these twenty-four shades will meet nearly all requirements, but intermediate shades will be furnished when desired.

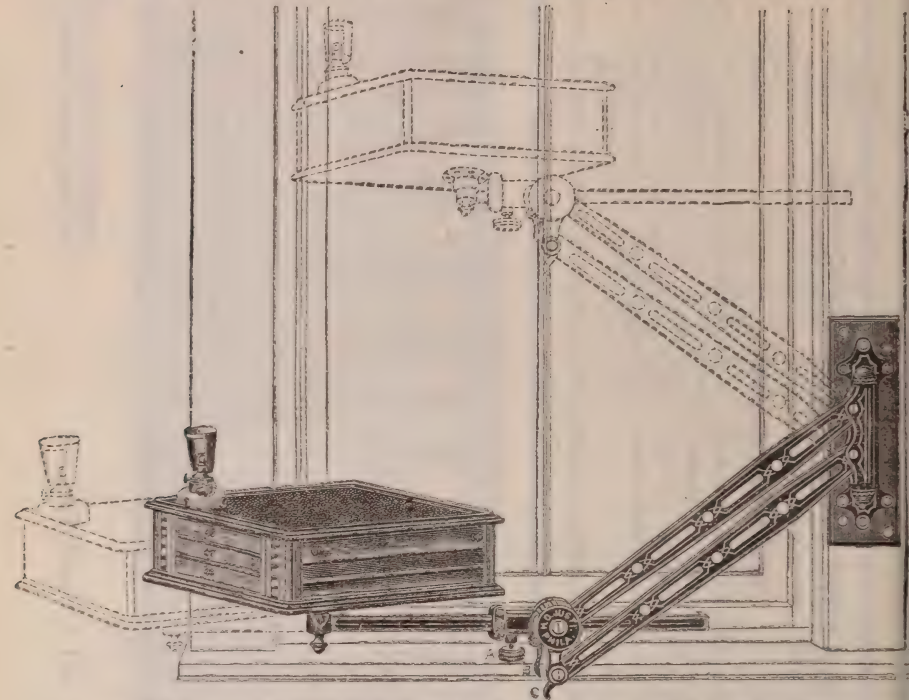
PRICE, $1.75.



For Sale by all Dental Depots.



The HANDY BRACKET.



The success which this Bracket has achieved and the universal popularity and demand for it, has far exceeded our highest expectations; having made a number of improvements since its original introduction, we considered it essential to give a new illustration of it as it is now made, accompanied by the Grigg Table.

The Bracket being so well known and fully described before we deem it unnecessary to repeat, but wish only to add, that when we stated this Bracket to be one of the most convenient ever placed on the market, we were not wrong in our assertion, as its great sale has since demonstrated.

PRICES

Handy Bracket with Table No. 1,	$12,00
" " " " No. 2, Lamp and Shield,	14.00
" " " Grigg Table, " " "	24.00
" " " Allen " Plain Sides, Lamp and Shield,	18.00
" " " " " Glass " " " "	21.00
Small Table No. 1, covered with Cloth or Leather,	3.00
" " No. 2, " " " " Lamp and Shield,	5.00
Allen " Plain Sides " " " " " " "	9.00
" " Glass " " " " " " " "	12.0
Grigg " covered with Cloth or Leather, Lamp and Shield,	15.0

H. D. JUSTI & SON,

PHILADELPHIA, - - CHICAGO,

1301 and 1303 Arch St. 66 Madison St.

DIRECTIONS FOR USE OF

BLAIR'S VAPORIZER

FOR THE TREATMENT OF PULPLESS TEETH.

1. If possible, always adjust rubber dam, or usual method of keeping tooth dry. Never use a broach or drill in canal until treated with vaporizer.

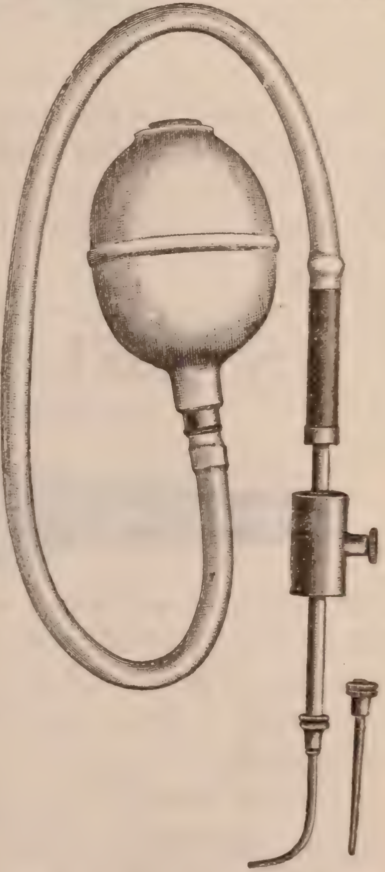
2. Clean out pulp chamber and expose openings of nerve canals; then introduce one of the points in opening of canal, and force the gas generated in the vaporizer into the canal until the root is saturated with the gas. Clean out canals thoroughly when possible, then treat again and fill immediately, if there is no indication of pus coming through the end of roots.

3. If there is a blind abscess in the tooth, stop up lightly with cotton and have patient return on third day. Three treatments will generally cure any case of blind abscess.

4. If there is a fistulous opening, try and force gas through same. One application is often all the case will require.

Open screw top on vaporizer and place small quantity of the iodoform (which accompanies each instrument) in chamber; then heat sufficiently, not too hot, to cause a thin stream of vapor to issue, on pressure of bulb, from point of vaporizer needle. Then insert in canal and force gas into same.

This gas will penetrate to every point in the canal and will absolutely destroy every vestige of animal life.



PRICE, EACH, $3.50.

MORRISON BROS., Sole Agents,

NASHVILLE TENN.

Hawe's Moulding Flasks.

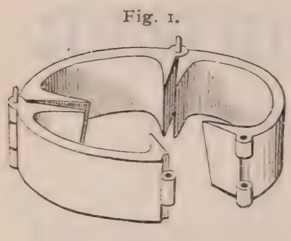


Fig. 1.

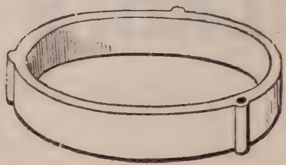


Fig. 2.

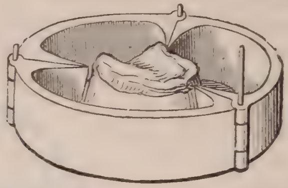


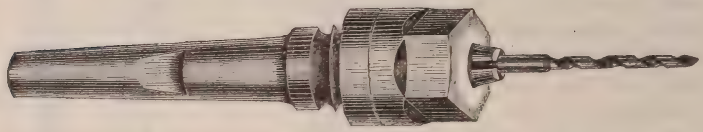
Fig. 3.

Fig. 1 represents the lower section of the Flask, slightly opened, to show the Joints. Fig. 2 is the upper section. When ready for use, the lower section is closed and confined by a Pin, and the Plaster Model placed in it, as represented in Fig, 3.

Price - - - - - $3.00

STEEL CHUCK.

PATENTED.



The above cut represents a very complete SELF-CENTRING, THREE-JAWED STEEL CHUCK, carefully made, durable and convenient. The wearing parts are hardened ; the jaws have a good bearing on the drill, and hold securely either a straight or tapered shank.

It carries Drills, Burs, or Corundum Points of the Dental Engine, one-eighth of an inch in diameter, and under, and made to fit our Amateur, United States Short Spindle American Short Spindle, and Hand and Foot Lathes.

Price, with Wrench, - - - $2.00.

REDUCED PRICES

OF

Dental Machinery of Our Own Design.

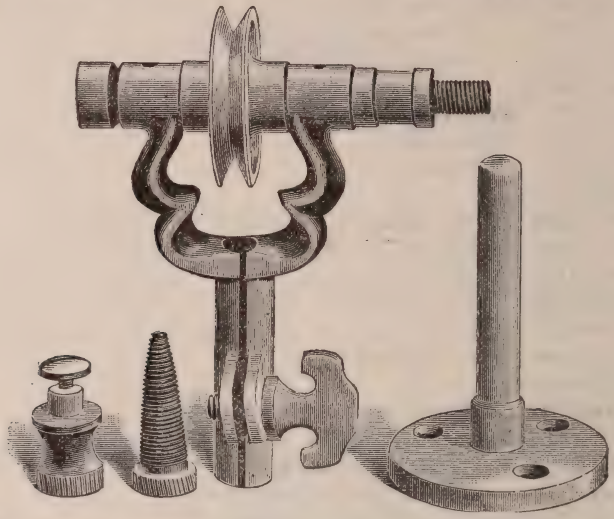
Amateur Lathe—Complete,	$25 00
“ “ Head, &c. all above stand,	13 00
“ “ Stand and Cord,	13 00
United States Lathe—Long Spindle,	15 00
“ “ “ Short Spindle,	15 00
“ “ “ Stand and Cord,	11 00
American Lathe,	14 00
“ “ Extra Large Driving-Wheel,	15 00
Diamond Lathe—Complete,	13 00
“ “ Fly Wheel,	7 00
Fly-Wheel No. 1,	7 00
Portable Hand or Foot Lathe—Complete,	5 50
“ “ “ “ Without Foot Attachment,	5 00
Quadrant Hand Fly-Wheel Lathe,	4 50
Hand Fly-Wheel Lathe,	4 50
Hand Lathe,	4 00
Diamomd Lathe Head—Polished Brass,	6 00
Socket Table Head,	4 50
U. S. Table Head—Holes in base to screw to table,	4 00
Engine Lathe Head—Nickel Plated,	4 00
American Lathe Head—Holes in base to screw to table,	4 00
Ladles and Handle—Two Ladles and one Handle,	75
Extension Brackets—Weight only five pounds,	6 00
Patent Portable Head-Rest—Nickel Plated,	10 00
Portable Head-Rest—Weight only four pounds, Bright Parts Nickel Plated,	4 50
Soldering Lamps,	90
Flask Presses—Well made and very strong—No. 1 Old Style,	1 50
“ “ “ “ “ “ “ No. 2 New Style,	1 50
Ingot Moulds—Broad base with handles, No. 1,	2 25
“ “ “ “ “ “ No. 2,	2 75
“ “ “ “ “ “ No. 3,	3 25
Bailey's Moulding Flasks—Per set of 2,	75
Steel Chuck,—to fit our Amateur United States, American, Short Spindle and Hand and Foot Lathe,	2 00
Welch's Nerve Paste,	1 00
Britannia Impression Cups—long handles, various styles and 29 sizes- each,	25

☞ **We make no charge for Boxing any of the above goods.**

SNOWDEN & COWMAN MFG. CO.

9 West Fayette Street, Baltimore, Md.

ENGINE LATHE HEAD FOR BRIDGE AND CROWN WORKERS.



THIS LATHE HEAD CAN BE ATTACHED TO SHAW ENGINE BY SLIPPING SOCKET OVER STANDARD AND TIGHTENING THUMB SCREW. IT IS VERY LIGHT AND NEATLY NICKEL PLATED. IT RUNS VERY SMOOTHLY AND LIGHTLY. IT ALSO CAN BE MOUNTED ON TABLE AS SHOWN IN CUT BY THE SMALL ATTACHMENT. . . . .

PRICE COMPLETE - - $4.00.

VULCANIZERS

Our Own Manufacture.

WE ARE MAKING 3 STYLES.

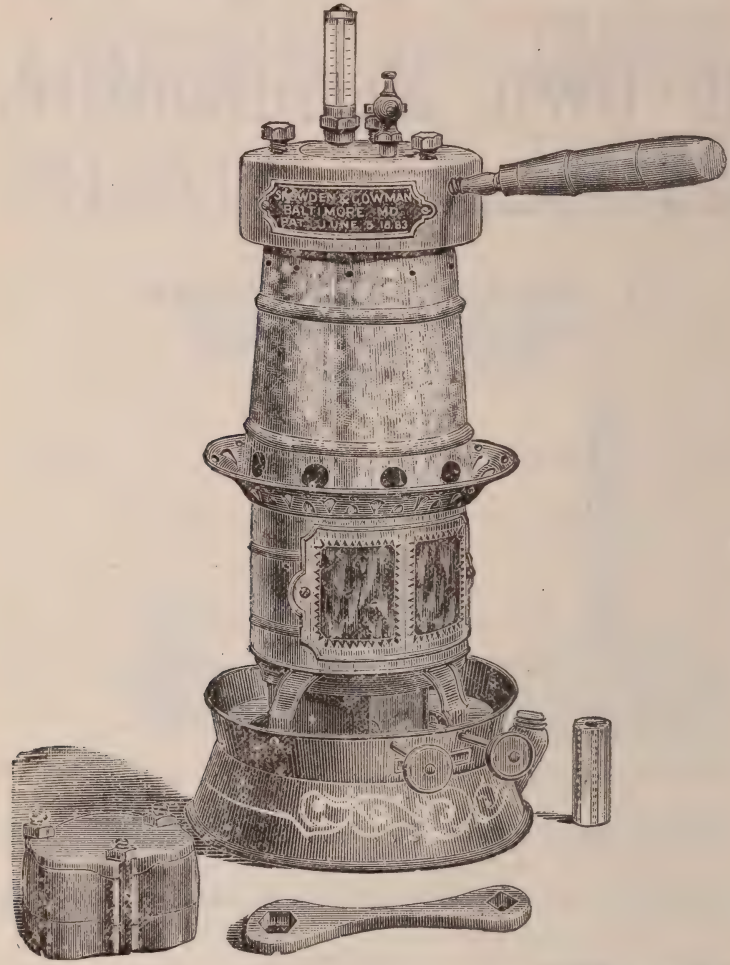
Complete with Coolidge's Gas and Time Regulator, . . .	$25 00
Complete with Gage and Blow-off Cock for Gas or Kerosene, ...	21 00
Complete with Thermometer and Blow-off Cock for Kerosene or Gas, ...	18 00
Vulcanizers complete with Two Brass Flasks, instead of Iron Flasks, adds	1 50
Vulcanizers complete without Two Iron Flasks, deduct	1 50
Vulcanizers complete, less Kerosene Stove, deduct . .	1 70
Vulcanizers complete, less Gas Stove, deduct	1 00
Large Iron Flasks, each	1 00
Large Brass Flasks, each	1 50

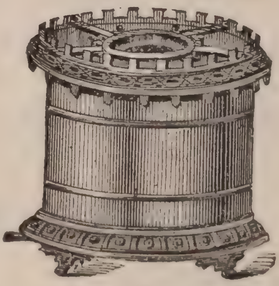
SNOWDEN & COWMAN MFG. CO.

9 W. Fayette Street, BALTIMORE, MD.

SNOWDEN & COWMAN MFG. CO.'S

New Patent Vulcanizer.



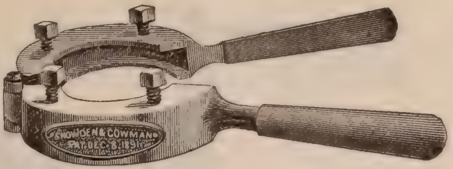


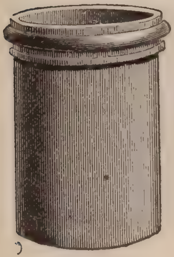
Complete for Kerosene or Gas, with Two Large Malleable Iron Flasks, ***$18.00***

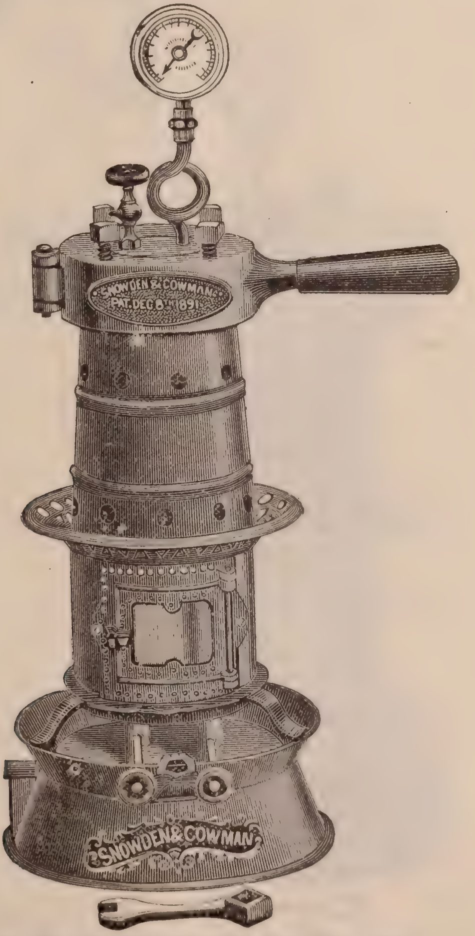
Gas Stove.

PATENTED DEC. 8, 1891.

Snowden & Cowman Mfg. Co.'s Hinged Clamp Vulcanizer.





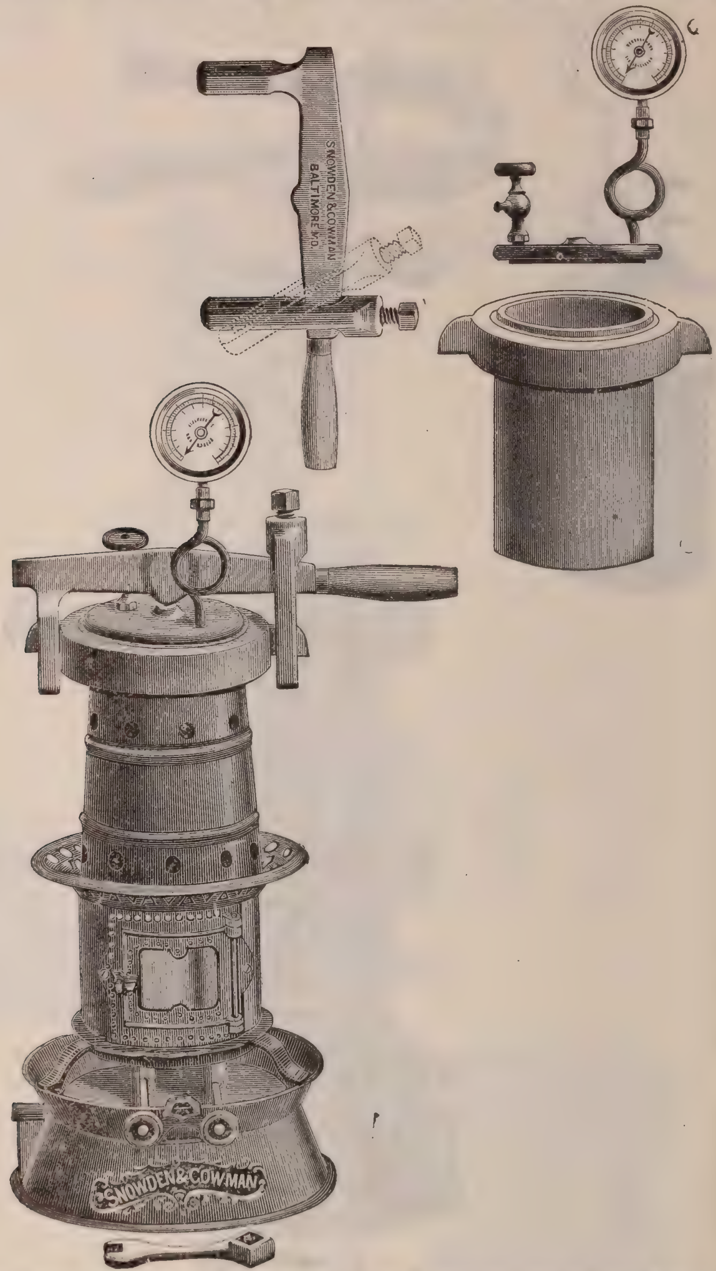


Price complete with 2 Flasks Improved for Gas or Kerosene with Guage as represented,...................... $21,00

With Thermometer and without Guage,.......... . 18.00

CIRCULARS ON APPLICATION.

Snowden & Cowman Mfg. Co.'s Improved Cross-Bar Vulcanizer.



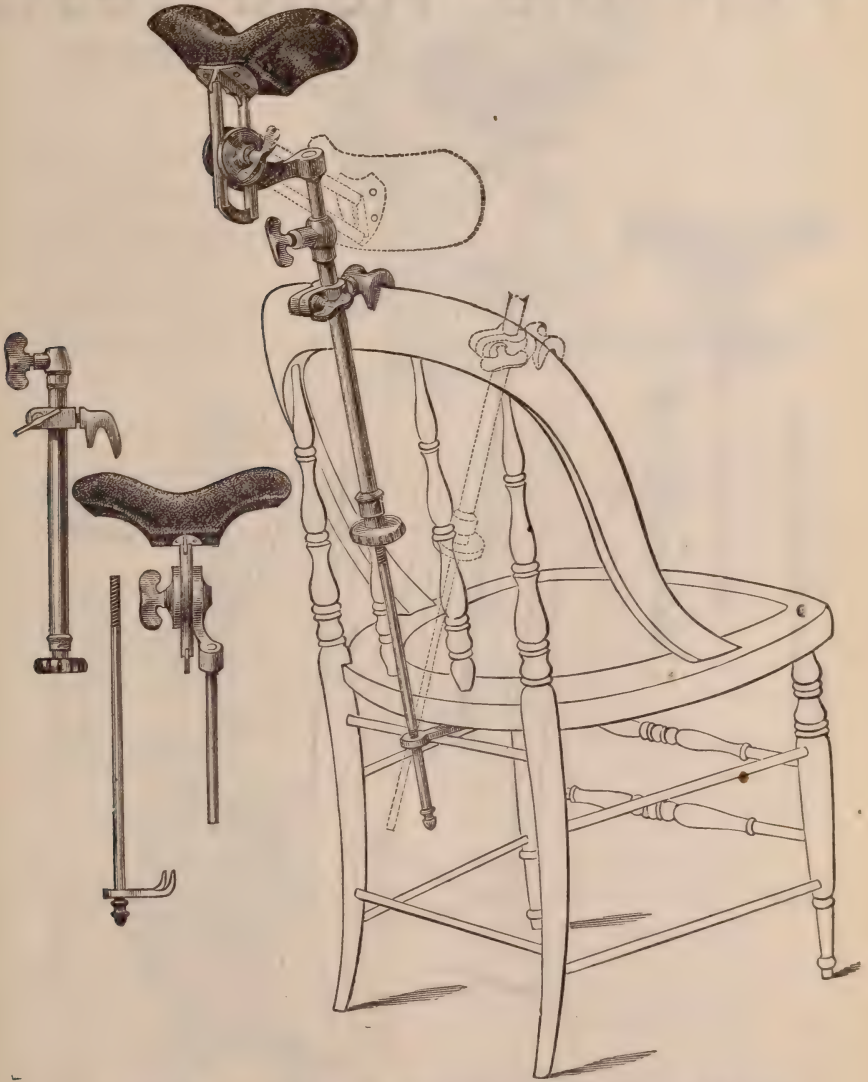
Price complete with two Flasks for Gas or Kerosene, with Guage as represented,	$21.00
With Thermometer and without Guage,	18.00

CIRCULARS ON APPLICATION.

Snowden & Cowman Mfg. Co.'s

—NEW—

Portable Head-Rest.



PRICE, Full Nickel Plated, - - $10.00

—MANUFACTURED AND FOR SALE BY—

SNOWDEN & COWMAN MFG. CO.

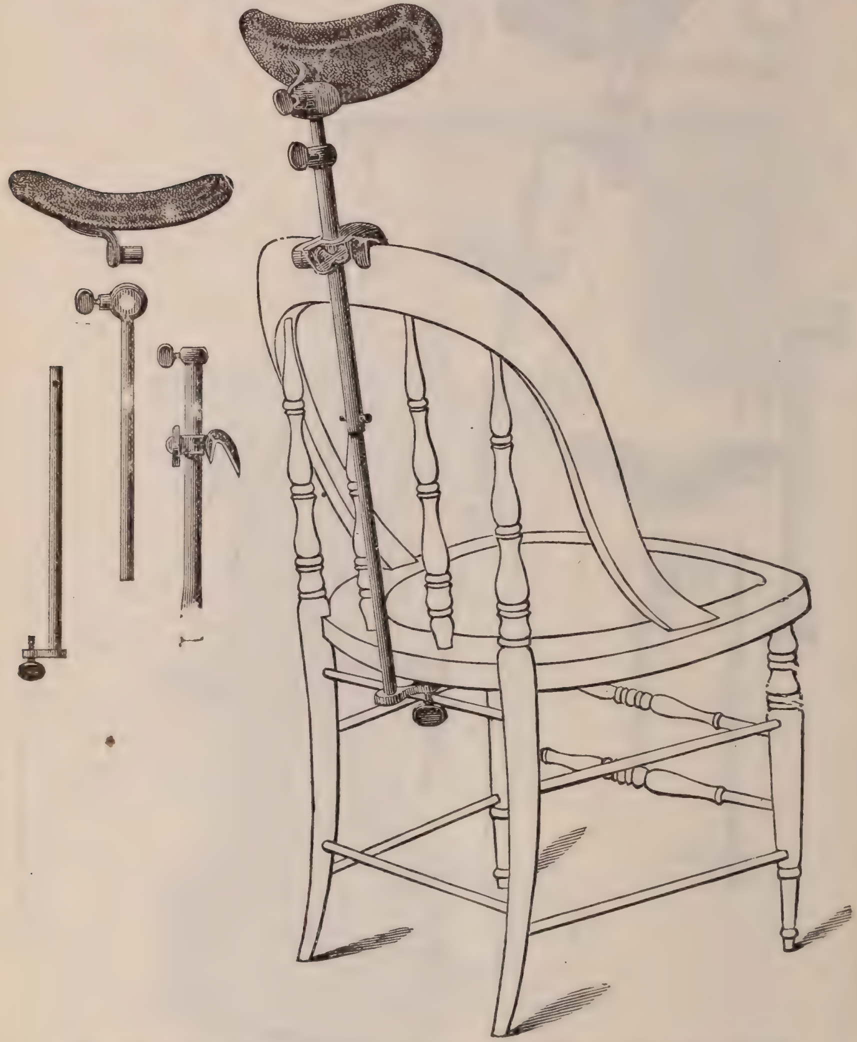
9 West Fayette Street Baltimore Md.

Price Reduced!

SNOWDEN & COWMAN MFG. CO.'S

IMPROVED–

Portable Head-Rest.

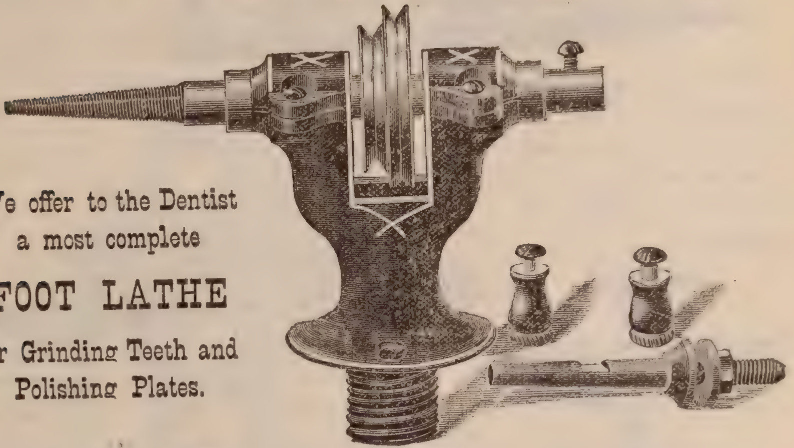


This Head-Rest can be attached to any chair, is very firm, and can be raised, lowered or moved backward or forward without interfering with attachment to the chair. Handsomely painted and bright parts nickel-plated.

It weighs only 4 lbs., and occupies a space only of 13 x 4 inches. PRICE, $4 50.

Price Reduced.

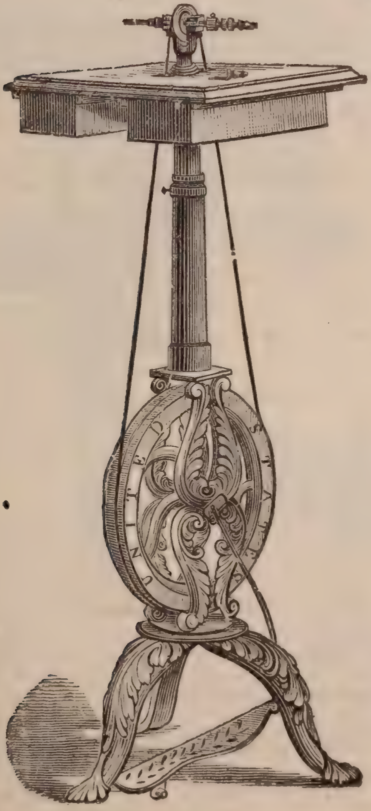
UNITED STATES LATHE.



We offer to the Dentist
a most complete

FOOT LATHE

for Grinding Teeth and
Polishing Plates.



It has been gotten up in a superior manner, great care having taken to make it durable and efficient. It has a movable column and table, which is capable of being elevated eight inches, to accommodate the operator in either a sitting or standing posture.

It can be packed in a box sixteen inches square, and can be set up in a few minutes, presenting a very neat and pleasing appearance, suitable for the office or laboratory. It is finished in bronze, and runs very light and steady.

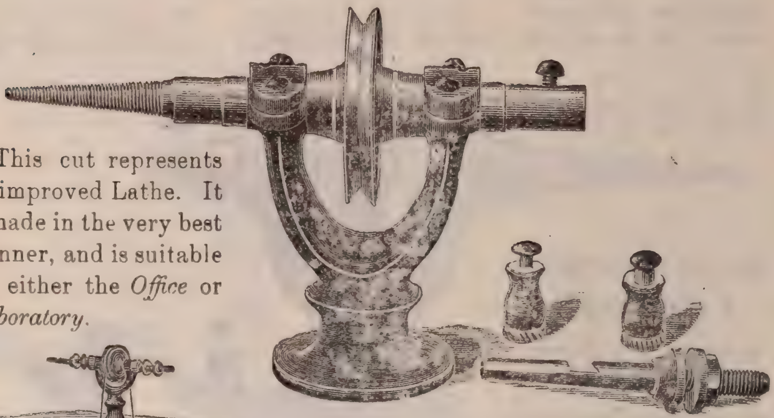
Price of Lathe complete with Short Spindle, as per cut,	$15.00
Price of Lathe complete with Long Spindle,	15.00
Price of Stand only, including Cord and and Coupling,	11.00

Snowden & Cowman Mfg. Co.,

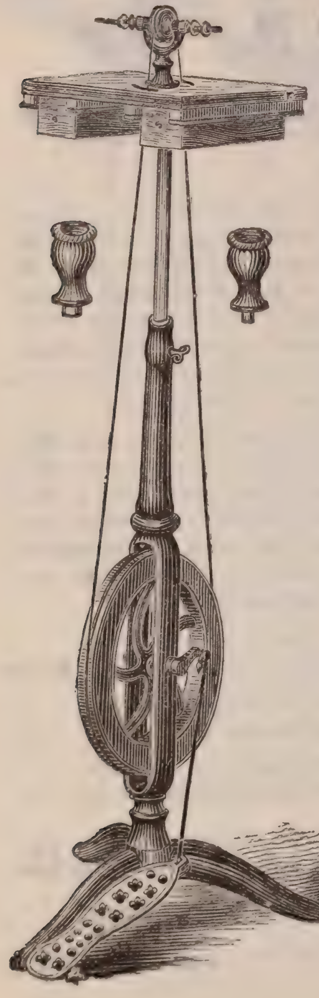
9 W. Fayette Street,

BALTIMORE, MD

AMERICAN LATHE, PRICE REDUCED.



This cut represents an improved Lathe. It is made in the very best manner, and is suitable for either the *Office* or *Laboratory*.



It has a solid spindle, one end of which is a taper screw for brush or felt wheels, and also, a space for a large corundum wheel. The other side of the spindle has a space for a large corundum wheel and a screw to receive the chucks, on which very small corundum wheels can be placed

It has a movable column and table, which is capable of being elevated ELEVEN inches, to accommodate the operator in either a sitting or standing posture.

Either end of the spindle can be thrown towards the operator, if more convenient, by the set screw at the top of the column.

We also make for this Lathe a Socket Spindle—similar to our U. S. Lathe Short Spindle.

Price of Lathe, as per cut, with two Chucks,	$14.00
Price of Lathe, with Socket Spindle, with two Chucks,	14.00
Price of Lathe, with Extra Large Driving Wheel,	15.00
Chucks, extra,	.15

☞ No charge for Boxing.

SNOWDEN & COWMAN MFG. CO.,

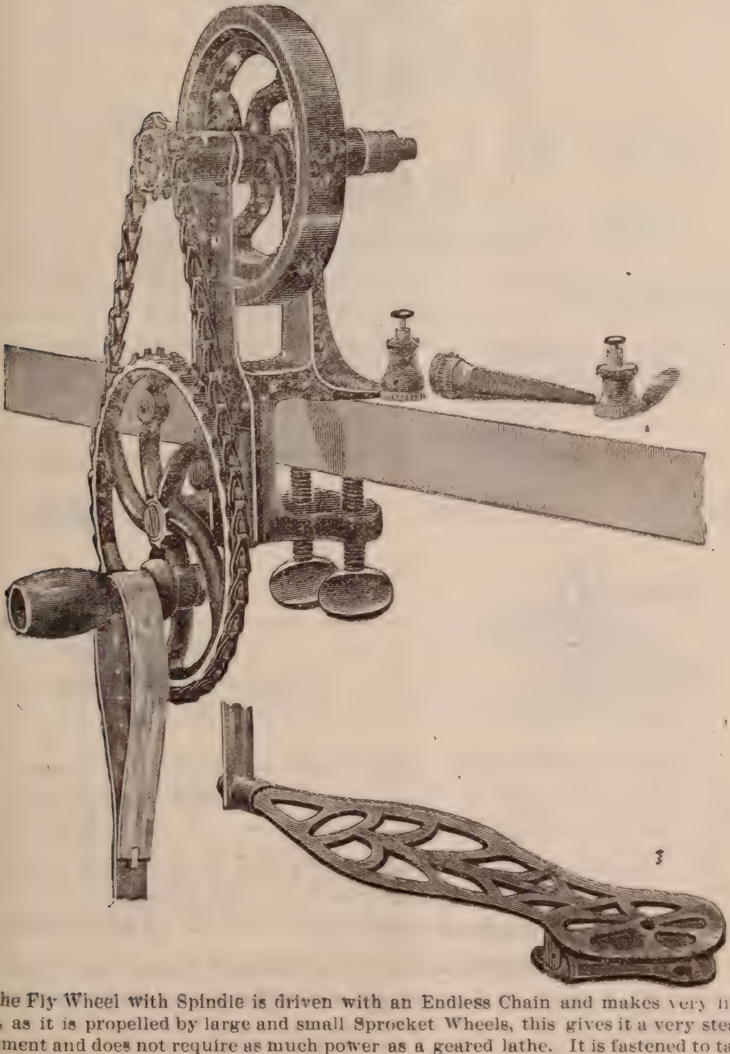
9 W. Fayette Street, Baltimore

SOMETHING NEW FOR TRAVELLING DENTISTS.

LINK CHAIN LATHE,

TO BE USED EITHER BY HAND OR FOOT POWER.

PRICE, - $7.00.



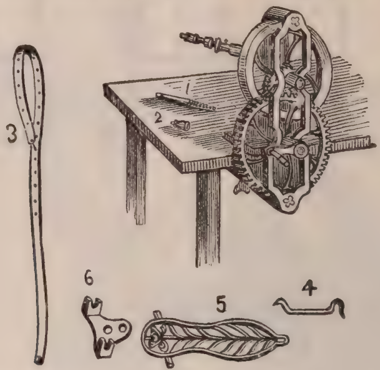
The Fly Wheel with Spindle is driven with an Endless Chain and makes very little noise, as it is propelled by large and small Sprocket Wheels, this gives it a very steady movement and does not require as much power as a geared lathe. It is fastened to table or bench by two Thumb Screws which make it impossible to turn when both are screwed up. It is very light and can be carried in a small satchell.

Snowden & Cowman Mfg. Co.,

9 W. Fayette Street, BALTIMORE, MD.

PRICE REDUCED.

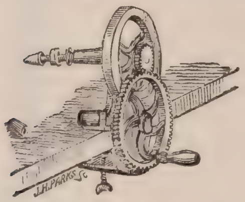
Portable Hand or Foot Lathe.



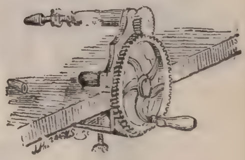
The above is a cut of a PORTABLE HAND OR FOOT LATHE, which is very efficient, manufactured for the traveling dentist; weighs under 7 pounds, and occupies the space of 6 by 9 inches. Members of the profession who have seen it pronounce it first rate.

Price, complete, - - - - - -	$5 50
Without Foot Attachment, - - -	5 00

Hand Fly Wheel Lathe.



Hand Lathe.



HAND FLY WHEEL LATHE.—It is intermediate between the Hand Lathe, and the Hand and Foot Lathe; it weighs only three pounds and is a first rate Lathe. - - PRICE, $4 50

HAND LATHE.—It is small, strong and durable, and weighs only two and a quarter pounds; we have sold a large number of these Lathes,—giving great satisfaction. - - PRICE $4 00

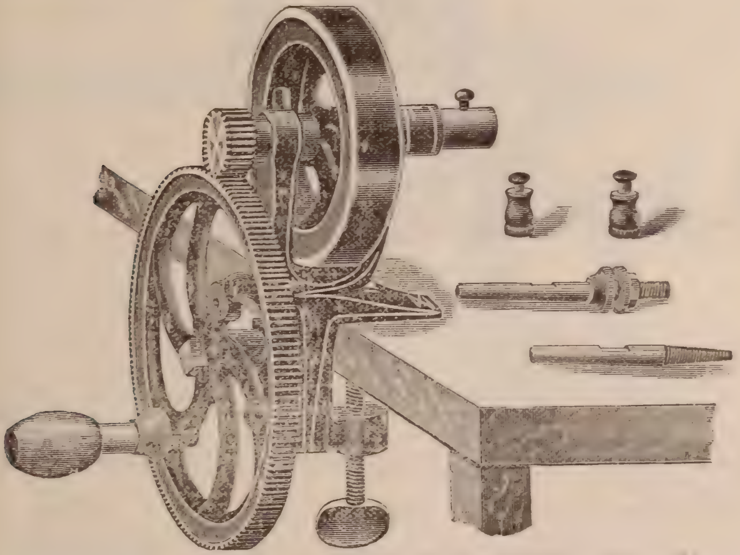
☞ All of the cog wheels of our Lathes are turned and cut on a machine, and are uniform, which makes them run true and with little noise.

SNOWDEN & COWMAN MF'G CO.,

No. 9 West Fayette St., Baltimore.

NEW HAND FLY WHEEL LATHE.

This Lathe is made larger and heavier and can be used with foot. It runs very steady and makes a good lathe for either Office Laboratory or to carry around. It is very neat.



PRICE, - - - -	$5 00
" with Foot Attachment and Strap,	5 50.

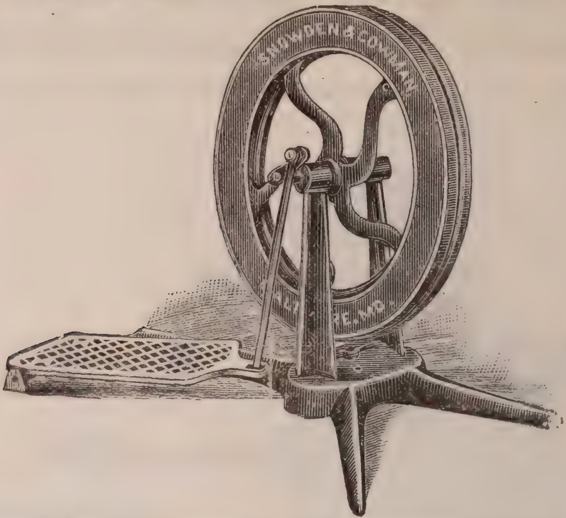
'The proof of the pudding is in the eating."

If the experience of dentists generally did not prove OUR GOLD AND PLATINA ALLOY a superior filling they would not be willing to pay nearly double more for it than the price of common amalgams. I suppose there is not another alloy or amalgam so generally used by our better class of dentists.

Welch's Alloy, 1 oz. $3.00; 2 oz. $5.50, 4 oz. $10.00; 10 oz. $22.00.
Welch's Amalgam, 1 oz. $2 00; 2 oz. $3 50; 4 oz. $7.00; 10 oz. $15.00.
Welch's Oxiphosphate, large $1.50; medium $1.00.
Liquids or powders, large 75 cts.; medium 50 cts.

T. B. WELCH, - - - - Vineland, N. J.

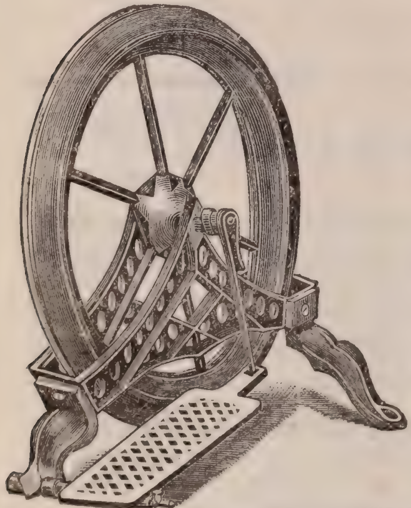
FLY WHEEL, No. 1, NEW.—Price Reduced.



This Fly Wheel weighs 30 lbs., with diameter of wheel 15 inches. The stand is the stiffest and steadiest of any driving wheel in the market. Owing to the position of the feet and the peculiar arrangement of the treadle, the wheel has an immense power and is very light running. In boxing remove pin that connects treadle with rod and fold treadle by side of the wheel. Weight complete, 46 lbs.

Price Boxed, - - - - - - $7.00

DIAMOND FLY WHEEL.—Price Reduced.



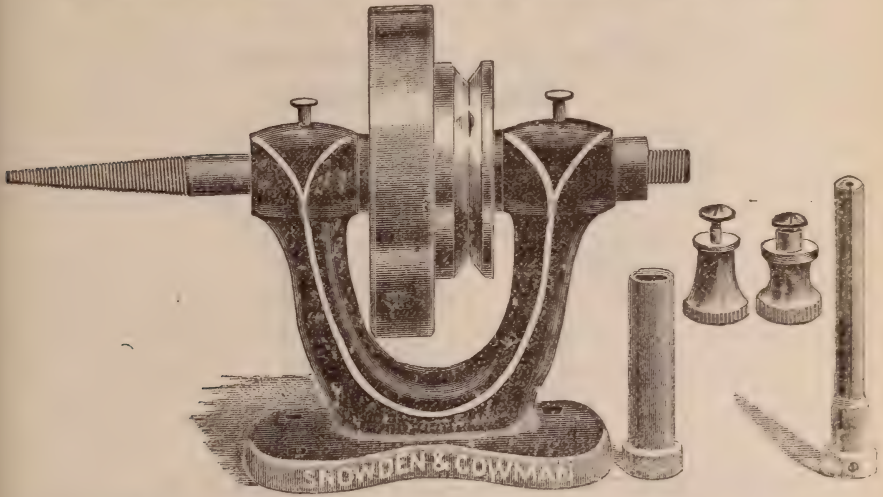
This fly-wheel is eighteen inches in diameter, with wrought iron spokes, in an iron frame, complete in itself, can be set any where, and runs very steady.

It has sufficient power and speed for any Dentist's Lathe Head. The feet are easily detatched, and all can be packed in a smaller box than any other Fly Wheel of its dimensions in the market.

Price Boxed, - - $7.00.

SNOWDEN & COWMAN MFG. CO.,
No. 9 W. Fayette Street,
Baltimore.

OUR NEW LATHE HEAD.

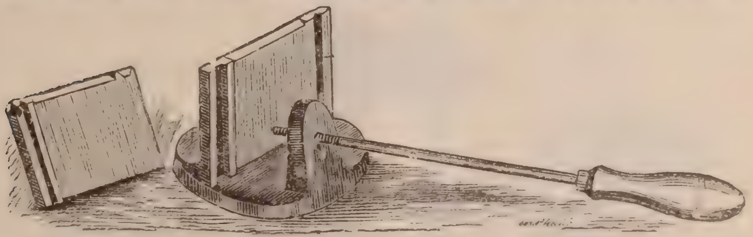


VERY SIMPLE AND EASY RUNNING.
ADJUSTMENT QUICKLY MADE.
VERY DURABLE AND STEADY.

PRICE WITH 4 CHUCKS, - - -	$5.00.

SNOWDEN & COWMAN MFG. CO.'S

INGOT MOULDS.



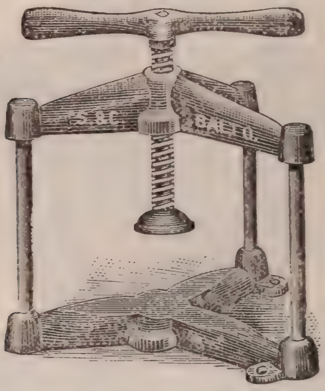
No. 1, will cast a plate from one half of an inch to two inches in width, also a round, half-round and square bar. -	$2.25
No. 2, will cast a plate from one half of an inch to two and three quarter inches in width, also a round, half-round and square bar. - - - - - -	$2.75
No. 3, will cast a plate 3 inches wide and 4 inches long also round, half round and square bar, -	$3.25

LIBERAL DISCOUNT TO THE TRADE.

Snowden & Cowman Mfg. Co's

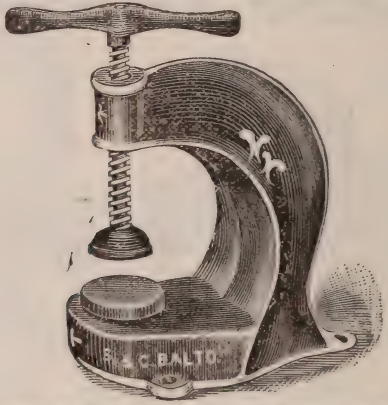
Flask Presses.

No. 1, Old Style Improved.



This Press is intended to close the flask after packing with rubber. It is of great advantage, saving screws and flasks. The upright rods are of wrought iron and the handle of the screw can be detached. They are *well made* and *very strong*, and has been made larger, so that it will take any Flask in the market. Price, - - - - $1.50.

No. 2, New Stvle.



This Press is made of cast iron, very heavy, with steel screw and detachable handle. It has a Pivot Plate to level up the flask, insuring always a central pressure on the flask; will take any flask in the market. Price - - $1.50

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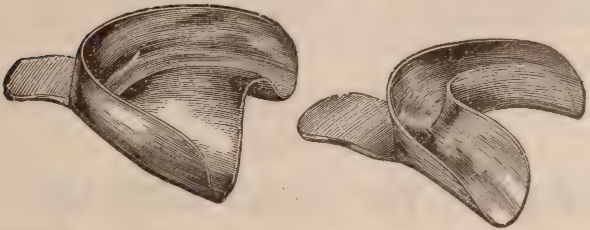
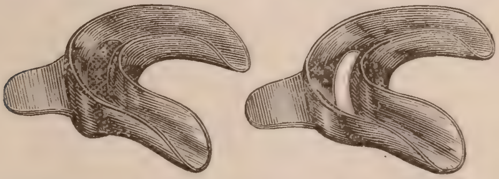


UPPER, Nos. 00, 0, 1, 2, 3, 4, 5, 6, 7.—(No. 00 is the largest size.)
LOWER, " 1, 2, 3, 4, 5. —(No 1 is the largest size.)

PARTIAL LOWER CUPS.



ENCLOSED CAVITY, Nos. 9, 10, 11.—(No. 9 is the largest size.)
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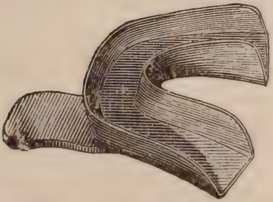

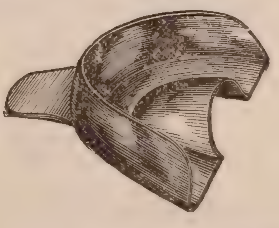

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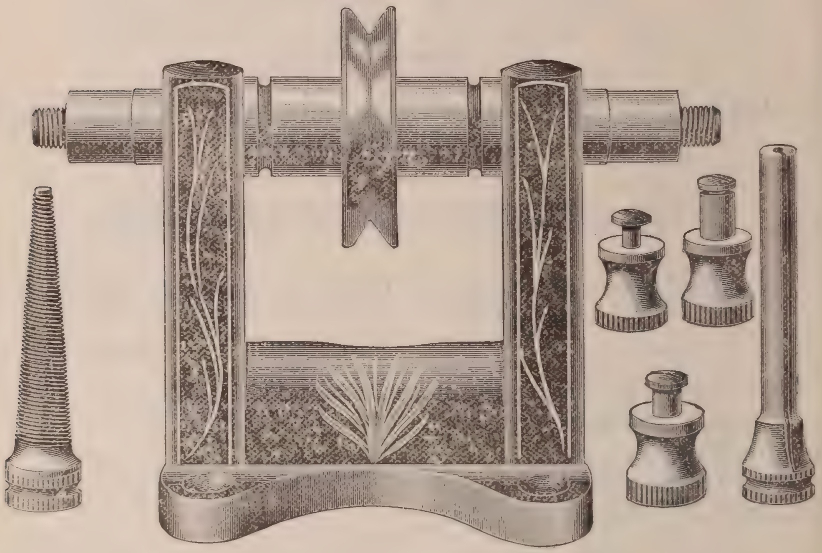

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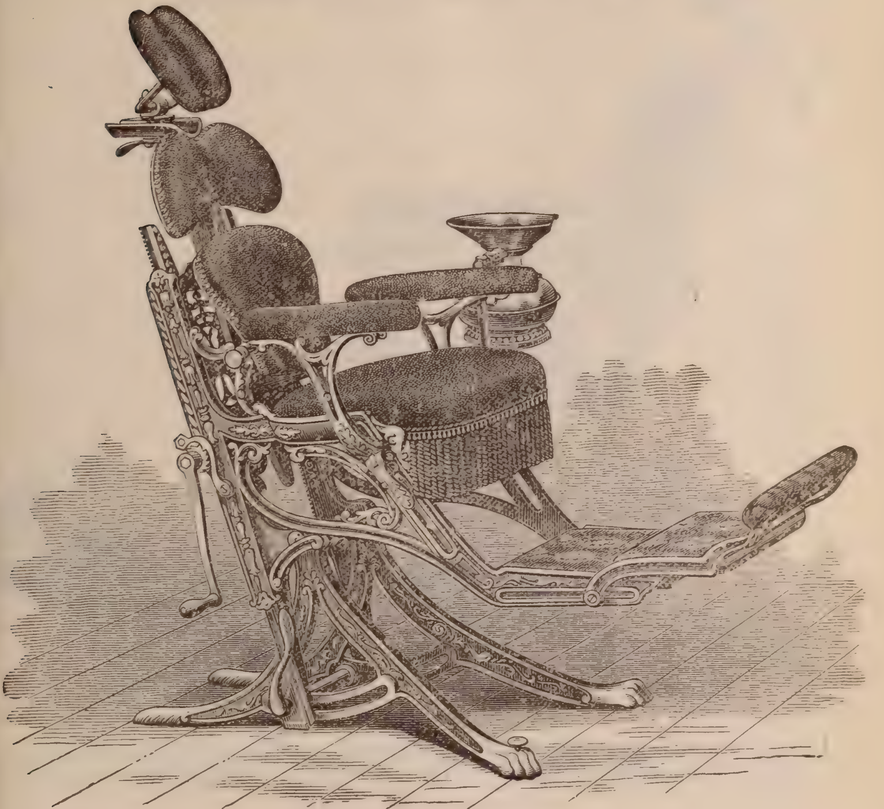

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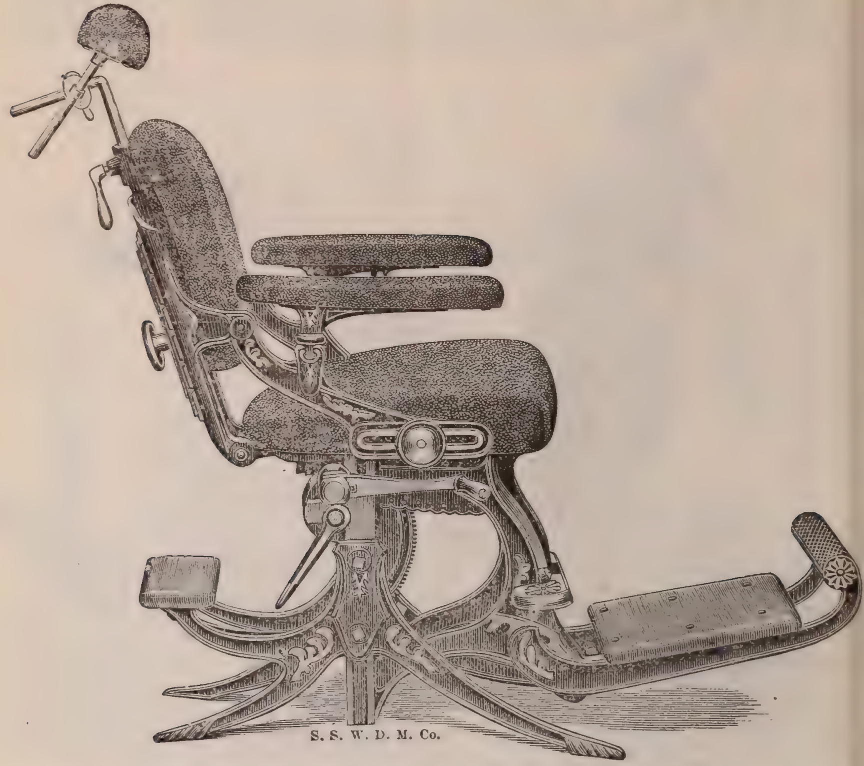

Patented December 28, 1875; July 3, 1877; November 20, 1877; March 9, 1880; May 22 1883. Re-issues July 4, 1876; March 19, 1878; August 27, 1878. Others pending.

This Chair was designed especially to meet a demand for a chair which, while affording a variety of essential movements, could be sold at a lower price than the Wilkerson, The S. S. White Pedal-lever, or the Morrison.

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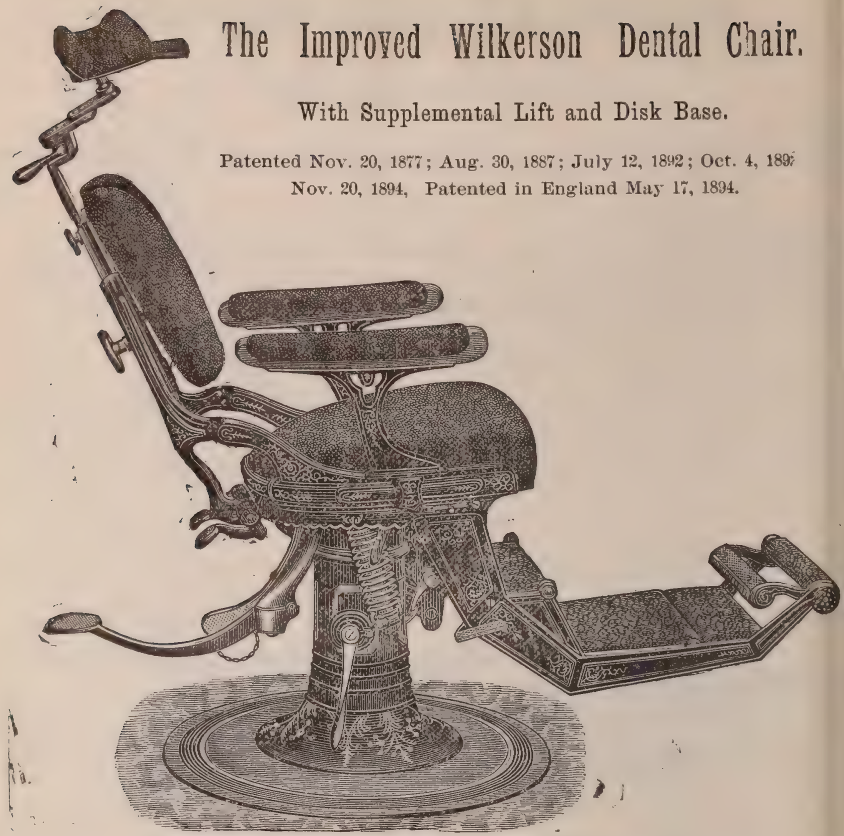
Nov. 20, 1894, Patented in England May 17, 1894.



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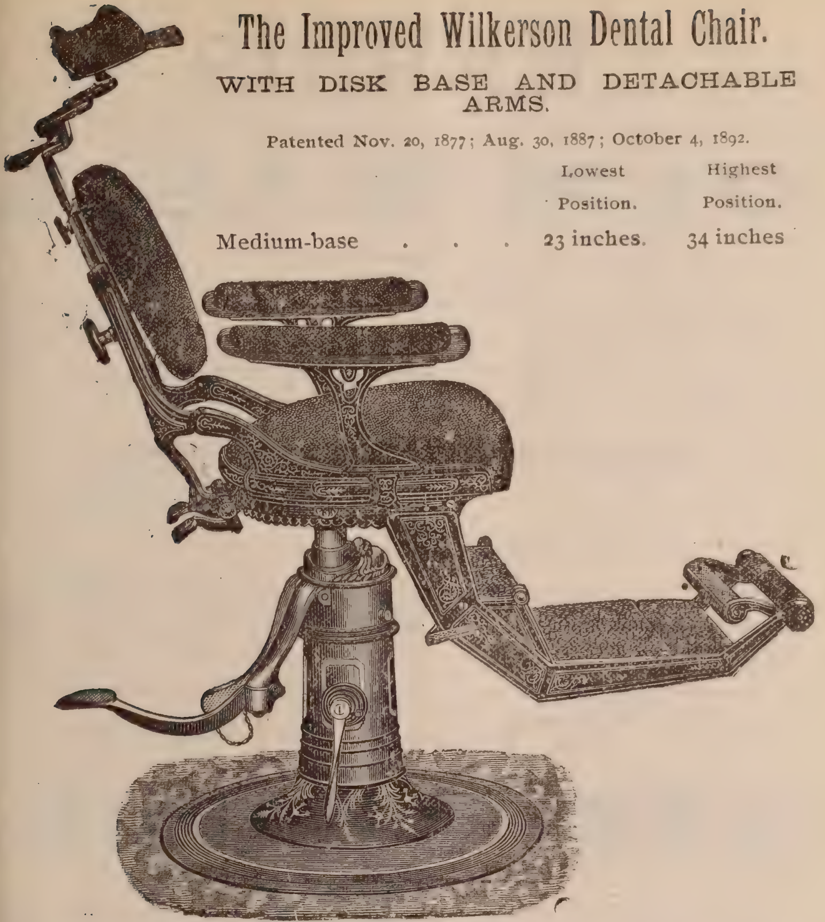
Medium-base . . .	23 inches.	34 inches



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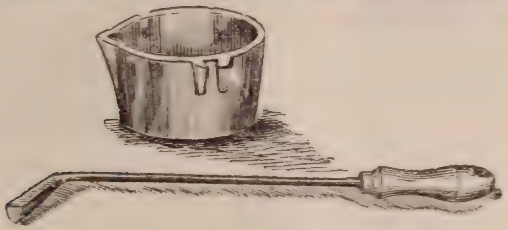

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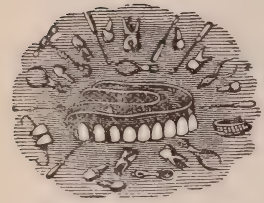

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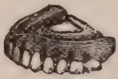

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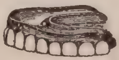

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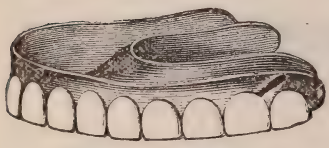

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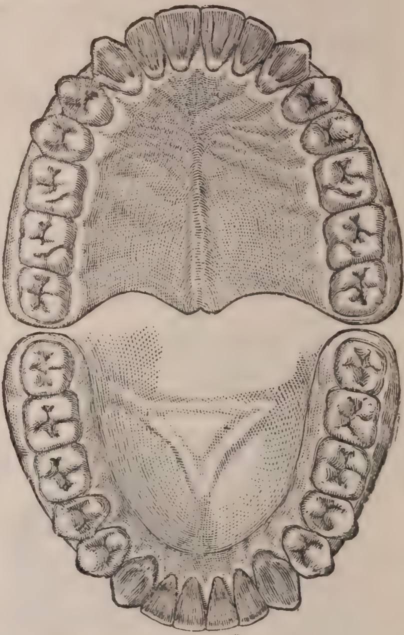

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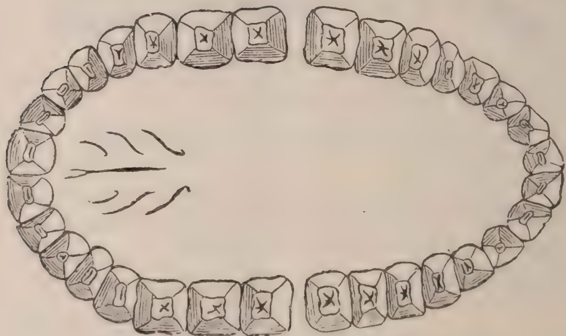

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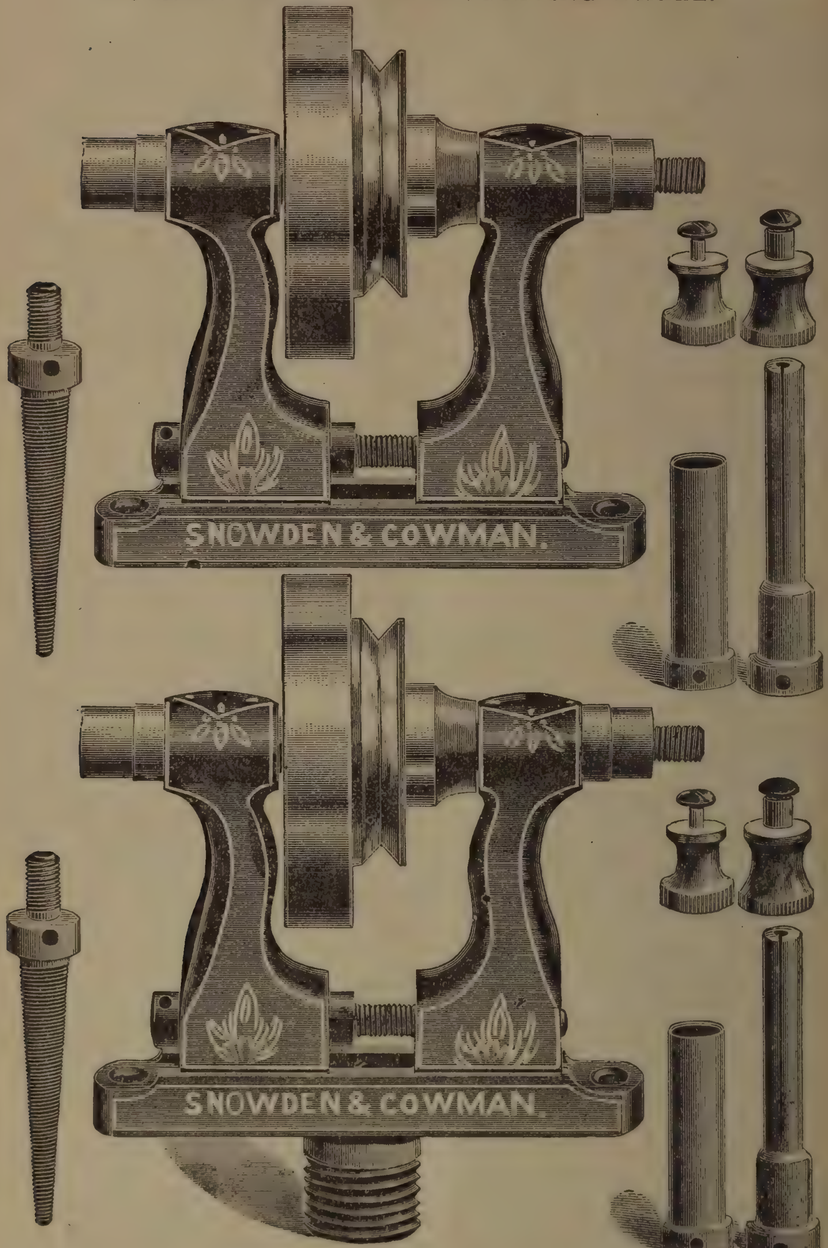
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FEBRUARY, 1898.

THE AMERICAN JOURNAL OF DENTAL SCIENCE.

EDITED BY

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RICHARD GRADY, M. D., D. D. S.

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Dr. F L. R. Wood, Me.
“ Ellis B. Bliss, D. C.
“ A M. Rice, Conn.
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“ David Genese, Md.
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“ J. A. Osmun, N. J.
“ S. A. White, Ga.
“ W. W. Allport, Ill.
“ J. B. Patrick, S. C.
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Dr. Geo. W. Field, Eng.
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“ S. Dwight Hodge, Vt.
“ C. P. Baird, Tenn.
“ Edwin, S. Niles, Mass.

At stated times during the Annual Sessions a number of the Corps of Clinical Instructors will hold Clinics and deliver Clinical Lectures.

Each year since its organization has added to the reputation and prosperity of this University Dental School, until now its graduates, in almost every part of the civilized world, are meeting with the success that ability will ever command. The past session was the most successful one in number of matriculates ever held; and visiting dentists from all parts of this country have expressed themselves as being astonished and gratified at the ability shown by the students when operating upon patients in the infirmary. Forming one of the departments of one of the oldest Universities in this country, its diploma is everywhere recognized and honored.

The instruction in both operative and mechanical dentistry is as thorough as it is possible to make it, and embraces everything pertaining to dental art. The advantages which the general and oral surgical clinics, to which the dental students are admitted, as indeed to all the lectures of the University, afford, cannot be overestimated. The many thousands of patients annually treated in the University Hospital, which is well known to be the largest Hospital in Baltimore, afford an abundance of material for the dent[illegible]ary and laboratory practice, and the oral surgery clinics.

The Dental Infirmary and Laboratory Building is one of the largest and most complete structures of the kind in the world. The Infirmary is lighted by forty-seven large windows, and is furnished with the most improved operating chairs.

It has again become necessary to enlarge the Dental Building, making an Infirmary nearly one hundred feet long, and a laboratory eighty feet long and forty-three feet wide.

The Dental Infirmary and Laboratory are open daily (except Sundays) during the entire year for the reception of patients; and the practice for dental students has increased to such an extent that all the students during the past session have had an abundance of practical work in both operative and prosthetic dentistry. This means for practical instruction has already assumed such large proportions that the supply has been beyond the needs of the large classes in attendance during the past sessions.

The exceedingly large number of patients for the extraction of teeth affords ample facilities for practical experience to every student.

In addition to the facilities afforded by this institution for a thorough course of instruction in the theory and practice of dentistry, the clinics in the University Hospital enable the Dental equally with the Medical Students to become familiar with the diseases and operations of practical Surgery, excisions of jaw, partial or entire; tumors, cancerous or benign, of various parts of the buccal cavity; plastic operations for the restoration of cheek, lips, etc., may be mentioned as having been before the class during the year. The induction of anæsthesia by means of different agents—ether, chloroform, bromide of ethyl, nitrous oxide gas, all being used in the clinics—cannot fail to be of use to the student of Oral Surgery. Junior as well as Senior students are afforded every opportunity for practical instruction in both operative and mechanical dentistry.

The Lecture Halls in the University Buildings are large and well lighted; and every facility will be afforded for practical and theoretical dental instruction. Demonstrations in Anatomy, Physiology and Pathology, (for which an abundance of material is furnished **free of charge**,) also form an important part of the regular course. The Dissecting Room is large, well ventilated and lighted, and the Demonstrator of Practical Anatomy passes much of his time in assisting the students and directing their labors. **Dissecting Material is furnished in abundance, free of charge.**

Qualifications for Graduation: The candidate must have attended two full courses of lectures of five months each in different years at the **Regular** or Winter Sessions in this institution. The following, however, will be considered as an equivalent to an attendance on one course of lectures in this College:—One course in any reputable Dental College; graduation in a reputable Medical College with one year of dental pupilage in a dental infirmary. The student meeting either of the above requirements will have the privilege of presenting himself as a candidate for graduation at the end of but one Course of Lectures. The matriculant must have a good English education; a diploma from a reputable literary institution, or other evidence of literary qualifications will be received instead of a preliminary examination. All students, both juniors and seniors, have equal advantages in operative and mechanical dentistry in this institution throughout every session.

Graduation in Medicine: Graduates of the Dental Department of the University of Maryland are required to attend but **one session** at the University School of Medicine prior to presenting themselves as candidates for the degree of "Doctor of Medicine." (See Catalogue.)

The **Regular or Winter Session** will begin on the 1st day of October, and will terminate in March of each year.

The **Summer Session**, for practical instruction, will commence in March, and continues until the regular Session begins. Students in attendance on the Summer Session will have the advantages of all the daily Surgical and Medical Clinics of the University.

The Fees for the Regular Session are $100, Demonstrators' Fees included; Matriculation Fee, $5; Diploma Fee, for candidates for graduation, $30; Dissecting Ticket, $10.

For Summer Session, no charge to those who attend the following Winter Session.

Beneficiary.—A Beneficiary student will be received from each State, on the recommendation of the State Dental Society, on the payment of half of the tuition fees. Board can be obtained at from $3.50 to $5 per week, according to quality.

The University Prize and a number of other Prizes will be specified in the annual Catalogue.

Students desiring information and the annual Catalogue will be careful to give full address and direct their letters to

F. J. S. GORGAS, M. D., D. D. S.
Dean of the Dental Department of the University of Maryland.
845 N. EUTAW STREET, BALTIMORE, MD

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This Institution was chartered in 1839 by an Act of the General Assembly of Maryland, and is the oldest and most widely known Dental College in the world. The majority of the eminent practitioners of dentistry in this country and Europe are graduates of the Baltimore College. The College Building is one of the largest and finest structures of the kind in this country, and the collection of specimens in the Museum cannot be excelled. The number of patients daily visiting the Infirmary has been so great that the Faculty have been compelled to add additional space and chairs to the already large and well-arranged Operating Hall. All such patients are operated on by the students, under the careful supervision of the Professors and Demonstrators.

The Annual Course of Instructions will commence on October 1st each year, and continue until the beginning of March following. The first weeks of the Session are devoted to Lectures on practical subjects especially the "Filling of Teeth," and Construction of Artificial Teeth, Clinics, Infirmary Practice and Demonstrations

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OSCAR ADELBURG, D. D. S.	N. J
G. MARSHALL SMITH, D. D. S.	Md
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The Fifty-eight Annual Session will commence on the 1st of October, 1897, and continue until April, 1898.

The Infirmary is open during the entire year for Dental Operations.

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Every manufacturer is obliged to adapt the mechanism to the limited space in which it is to be used, and yet we find that without regard to these limitations there is a steady clamor for changeable angle devices which will give such a range of movement as include Right, Acute, and Obtuse, Angles requiring complicated and delicate machinery which will be necessarily short-lived.

If the human mouth were large enough to enable us to make an Angle Attachment double the size of the present devices, we could guarantee fully six times the strength and wearing qualities; or, in other words, life. With this statement one can readily understand that the working life of such appliances depends on the bearings and wearing surface of the mechanism. For instance, if we contract the space for the necesarily small gears, so as to accommodate a bit-clamping device as in the No. 3 Attachment, or shorten the length of the head as in the No. 1, it is apparent that there cannot be as much chance for good bearings and simplicity of bit-lock as there is in an angle made on the principle of the No. 2, where the bit passes through the head and is held by the latch entering the groove of the bit.*

Many devices of this class have been made; in fact, they were among the first inventions advertised with the Dental Engine, but all of them have been subject to complaint because of being short-lived.

With due appreciation of the mechanical difficulities encountered in making these "multum in parvo" devices, we long since decided that our customers could be better and more economically served by making the three desirable angles—Right, Acute, and Obtuse—as separate and distinct organizations; and We now say that all the experiments up to the present time have comfirmed us in the opinion that eighteen dollars expended in the purchase of these three Angle Attachments, or twenty-four dollars for the three Angle Hand-Pieces, will give the operator more and better service than double these respective amounts spent on changeable devices.

Indisputable mechanical tests have fully verified these statements and practically demonstrated their truthfulness.

*See cut of bit-locking device on opposite page.

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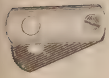

Face view of im-
roved Bit-Locking
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These Attach-
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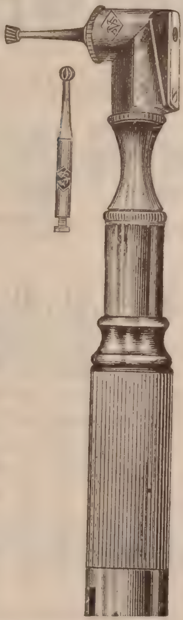
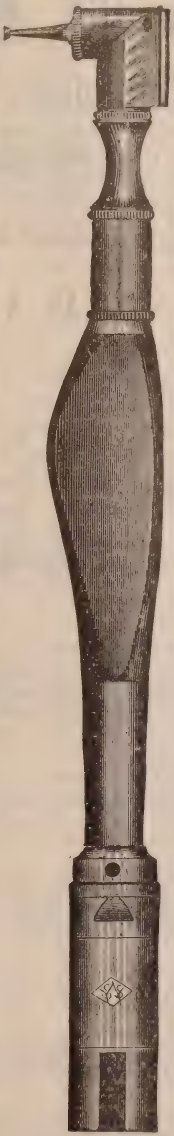
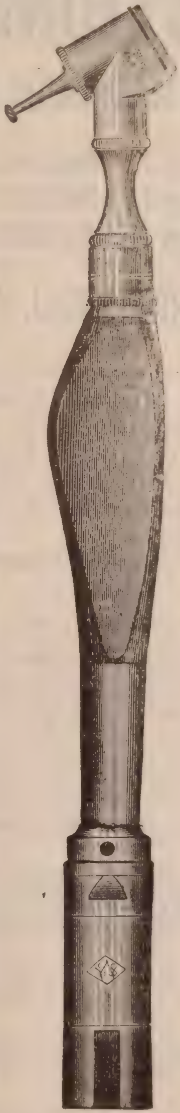
Right.



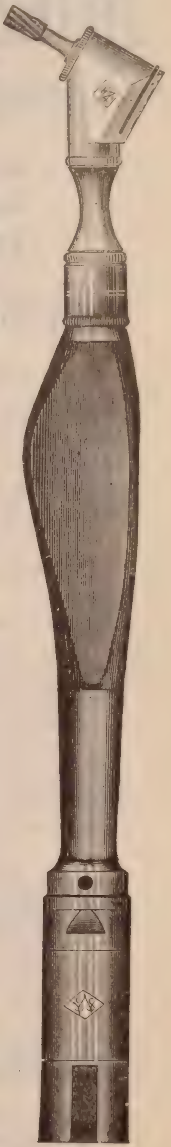
Right.



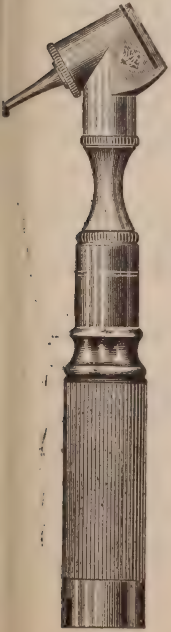
Acute.



Obtuse.



Acute.



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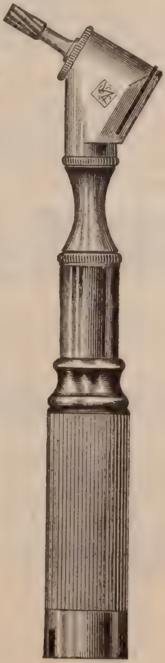

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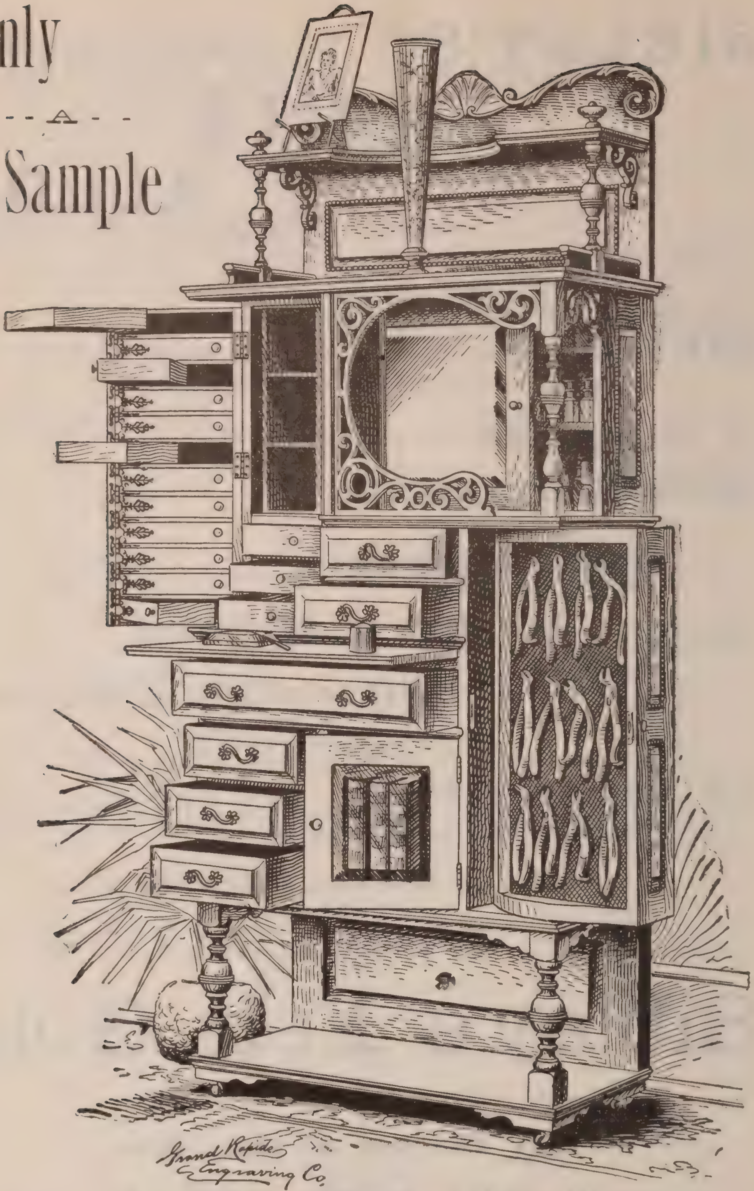
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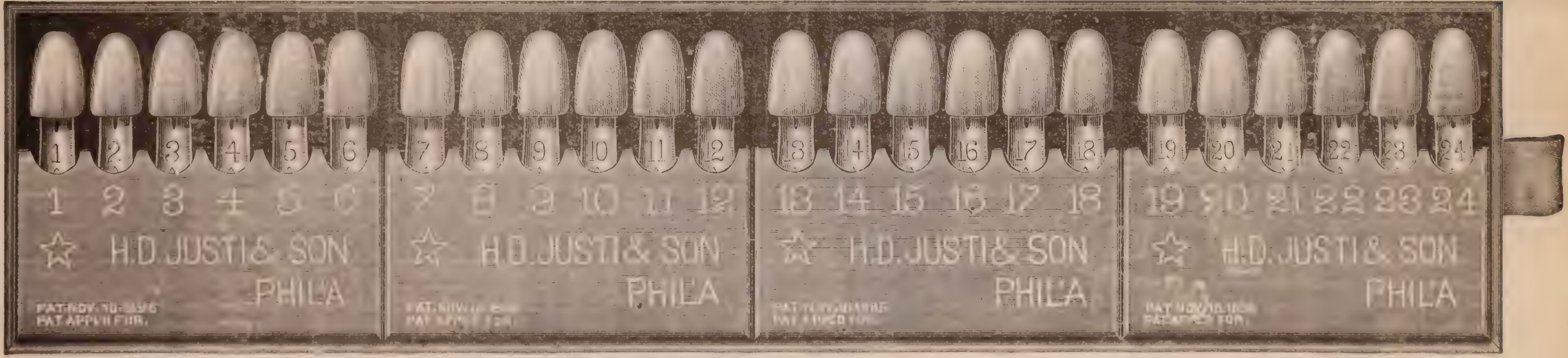

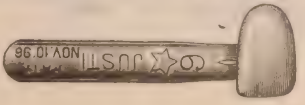

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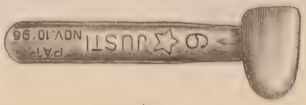

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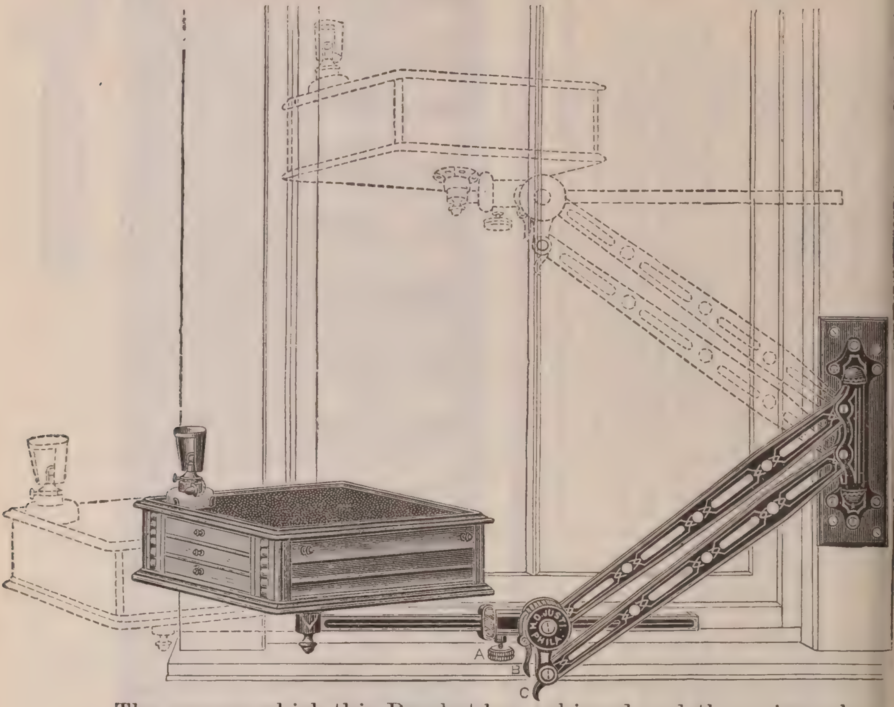

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" " No. 2, " " " " Lamp and Shield,	5.00
Allen " Plain Sides " " " " " " "	9.00
" " Glass " " " " " " " "	12.00
Grigg " covered with Cloth or Leather, Lamp and Shield,	15.00

H. D. JUSTI & SON,

PHILADELPHIA, - - CHICAGO,

1301 and 1303 Arch St. 66 Madison St.

DIRECTIONS FOR USE OF

BLAIR'S VAPORIZER

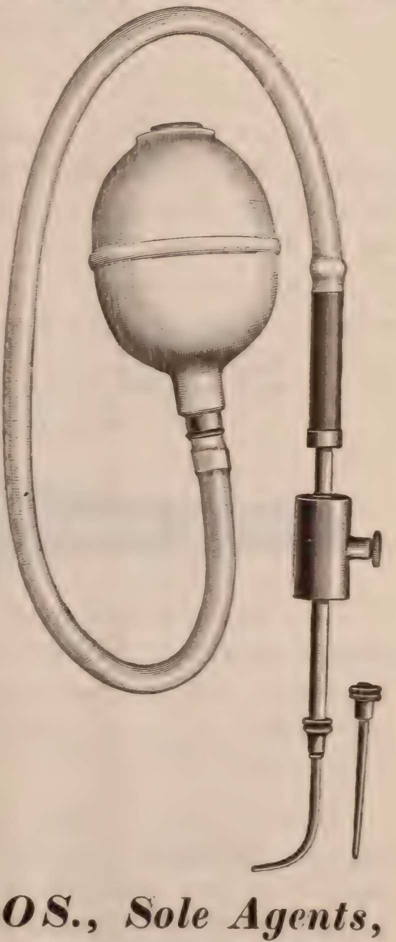
FOR THE TREATMENT OF PULPLESS TEETH.

1. If possible, always adjust rubber dam, or usual method of keeping tooth dry. Never use a broach or drill in canal until treated with vaporizer.

2. Clean out pulp chamber and expose openings of nerve canals; then introduce one of the points in opening of canal, and force the gas generated in the vaporizer into the canal until the root is saturated with the gas. Clean out canals thoroughly when possible, then treat again and fill immediately, if there is no indication of pus coming through the end of roots.

3. If there is a blind abscess in the tooth, stop up lightly with cotton and have patient return on third day. Three treatments will generally cure any case of blind abscess.

4. If there is a fistulous opening, try and force gas through same. One application is often all the case will require.



Open screw top on vaporizer and place small quantity of the iodoform (which accompanies each instrument) in chamber; then heat sufficiently, not too hot, to cause a thin stream of vapor to issue, on pressure of bulb, from point of vaporizer needle. Then insert in canal and force gas into same.

This gas will penetrate to every point in the canal and will absolutely destroy every vestige of animal life.

PRICE, EACH, $3.50.

MORRISON BROS., Sole Agents,

NASHVILLE TENN.

Hawe's Moulding Flasks.

Fig. 1.

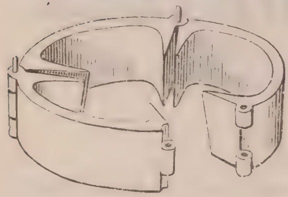


Fig. 2.

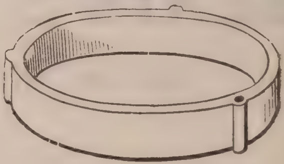


Fig. 3.

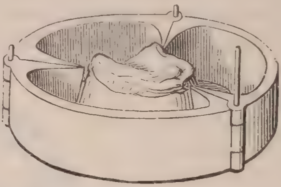
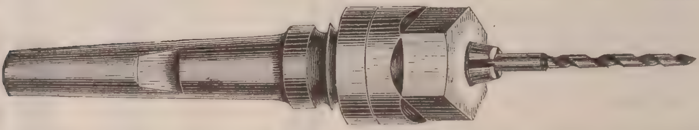


Fig. 1 represents the lower section of the Flask, slightly opened, to show the Joints. Fig. 2 is the upper section. When ready for use, the lower section is closed and confined by a Pin, and the Plaster Model placed in it, as represented in Fig, 3.

Price - - - - - $3.00

STEEL CHUCK.

PATENTED.



The above cut represents a very complete SELF-CENTRING, THREE-JAWED STEEL CHUCK, carefully made, durable and convenient. The wearing parts are hardened ; the jaws have a good bearing on the drill, and hold securely either a straight or tapered shank.

It carries Drills, Burs, or Corundum Points of the Dental Engine, one-eighth of an inch in diameter, and under, and made to fit our Amateur, United States Short Spindle American Short Spindle, and Hand and Foot Lathes.

Price, with Wrench, - - - $2.00.

REDUCED PRICES

OF

Dental Machinery of Our Own Design.

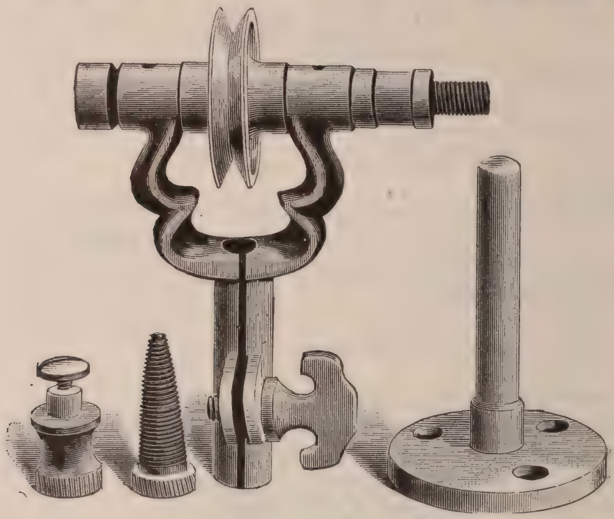
Amateur Lathe—Complete,	$25 00
" " Head, &c. all above stand,	13 00
" " Stand and Cord,	13 00
United States Lathe—Long Spindle,	15 00
" " " Short Spindle,	15 00
" " " Stand and Cord,	11 00
American Lathe,	14 00
" " Extra Large Driving-Wheel,	15 00
Diamond Lathe—Complete,	13 00
" " Fly Wheel,	7 00
Fly-Wheel No. 1,	7 00
Portable Hand or Foot Lathe—Complete,	5 50
" " " " Without Foot Attachment,	5 00
Quadrant Hand Fly-Wheel Lathe,	4 50
Hand Fly-Wheel Lathe,	4 50
Hand Lathe,	4 00
Diamomd Lathe Head—Polished Brass,	6 00
Socket Table Head,	4 50
U. S. Table Head—Holes in base to screw to table,	4 00
Engine Lathe Head—Nickel Plated,	4 00
American Lathe Head—Holes in base to screw to table,	4 00
Ladles and Handle—Two Ladles and one Handle,	75
Extension Brackets—Weight only five pounds,	6 00
Patent Portable Head-Rest—Nickel Plated,	10 00
Portable Head-Rest—Weight only four pounds, Bright Parts Nickel Plated,	4 50
Soldering Lamps,	90
Flask Presses—Well made and very strong—No. 1 Old Style,	1 50
" " " " " " " No. 2 New Style,	1 50
Ingot Moulds—Broad base with handles, No. 1,	2 25
" " " " " " No. 2,	2 75
" " " " " " No. 3,	3 25
Bailey's Moulding Flasks—Per set of 2,	75
Steel Chuck,—to fit our Amateur United States, American, Short Spindle and Hand and Foot Lathe,	2 00
Welch's Nerve Paste,	1 00
Britannia Impression Cups—long handles, various styles and 29 sizes—each,	25

☞ **We make no charge for Boxing any of the above goods.**

SNOWDEN & COWMAN MFG. CO.

9 West Fayette Street, Baltimore, Md.

ENGINE LATHE HEAD FOR BRIDGE AND CROWN WORKERS.



THIS LATHE HEAD CAN BE ATTACHED TO SHAW ENGINE BY SLIPPING SOCKET OVER STANDARD AND TIGHTENING THUMB SCREW. IT IS VERY LIGHT AND NEATLY NICKEL PLATED. IT RUNS VERY SMOOTHLY AND LIGHTLY. IT ALSO CAN BE MOUNTED ON TABLE AS SHOWN IN CUT BY THE SMALL ATTACHMENT. . . . .

PRICE COMPLETE - - $4.00.

VULCANIZERS

Our Own Manufacture.

WE ARE MAKING 3 STYLES.

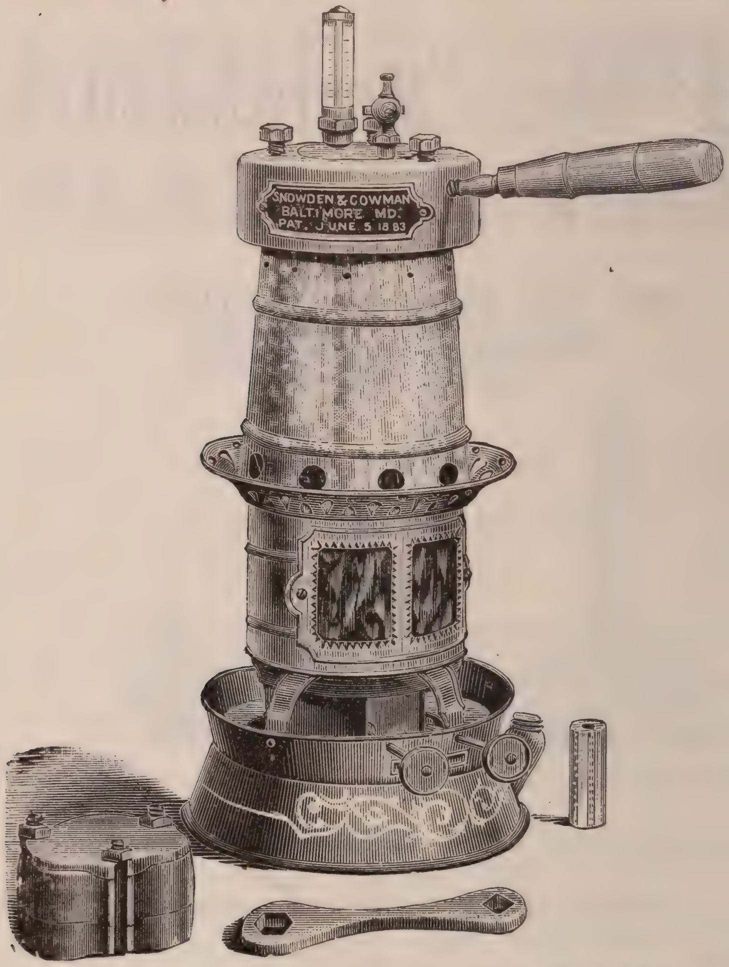
Complete with Coolidge's Gas and Time Regulator, . .	$25 00
Complete with Gage and Blow-off Cock for Gas or Kerosene, ...	21 00
Complete with Thermometer and Blow-off Cock for Kerosene or Gas, ...	18 00
Vulcanizers complete with Two Brass Flasks, instead of Iron Flasks, adds	1 50
Vulcanizers complete without Two Iron Flasks, deduct	1 50
Vulcanizers complete, less Kerosene Stove, deduct . .	1 70
Vulcanizers complete, less Gas Stove, deduct	1 00
Large Iron Flasks, each	1 00
Large Brass Flasks, each	1 50

SNOWDEN & COWMAN MFG. CO.

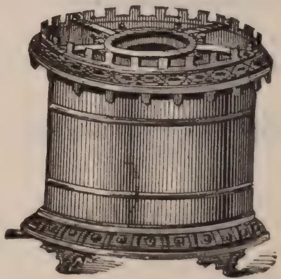
9 W. Fayette Street, BALTIMORE, MD.

SNOWDEN & COWMAN MFG. CO.'S

New Patent Vulcanizer.



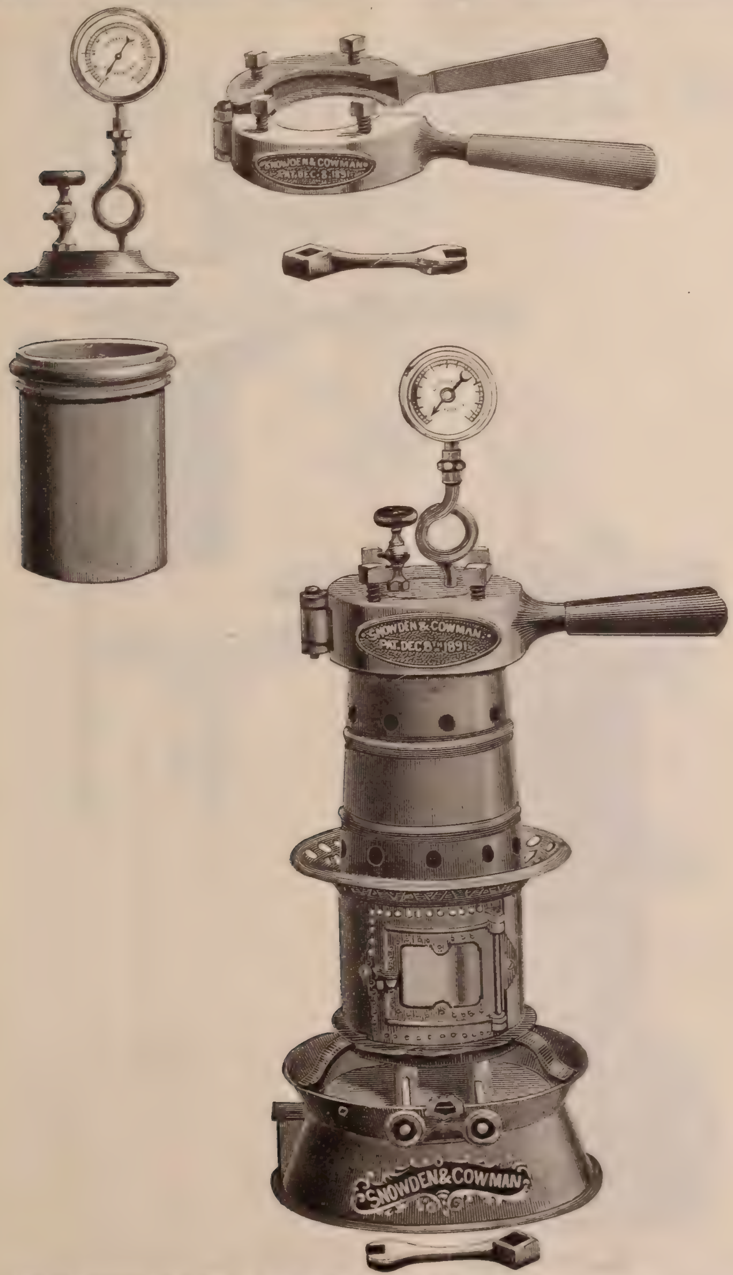
Complete for Kerosene or Gas, with Two Large Malleable Iron Flasks, ***$18.00***



Gas Stove.

PATENTED DEC. 8, 1891.

Snowden & Cowman Mfg. Co.'s Hinged Clamp Vulcanizer.

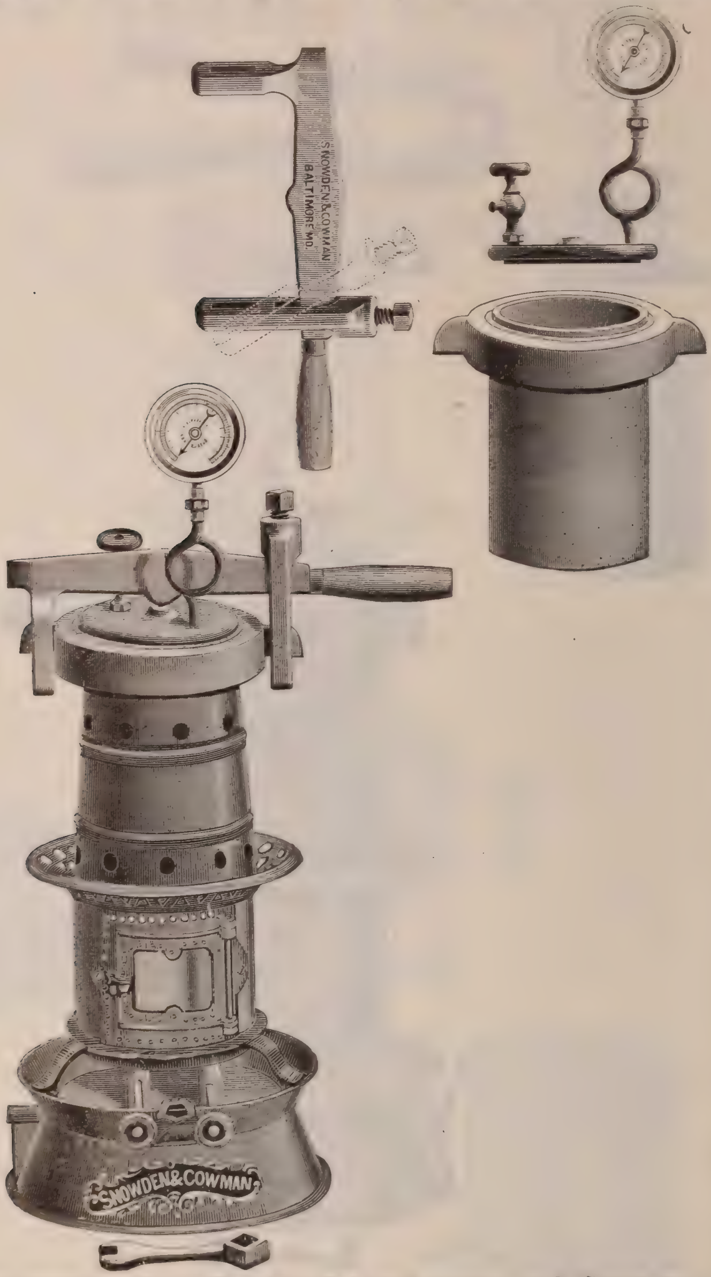


Price complete with 2 Flasks Improved for Gas or Kerosene with Guage as represented, ... $21,00

With Thermometer and without Guage,........... 18.00

CIRCULARS ON APPLICATION

Snowden & Cowman Mfg. Co.'s Improved Cross-Bar Vulcanizer.



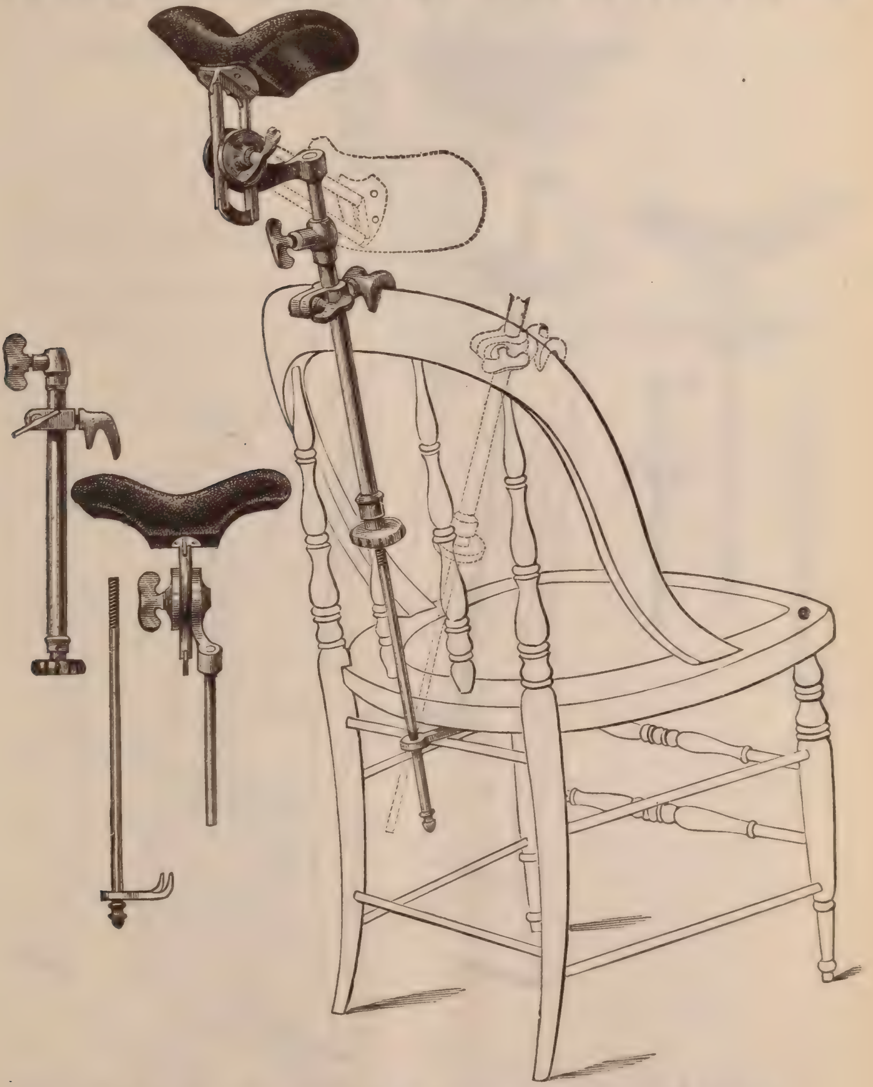
Price complete with two Flasks for Gas or Kerosene, with Guage as represented, ...	$21.00
With Thermometer and without Guage,..................................	18.00.

CIRCULARS ON APPLICATION.

Snowden & Cowman Mfg. Co.'s

—NEW—

Portable Head-Rest.



PRICE, Full Nickel Plated, - - $10.00

—MANUFACTURED AND FOR SALE BY—

SNOWDEN & COWMAN MFG. CO.

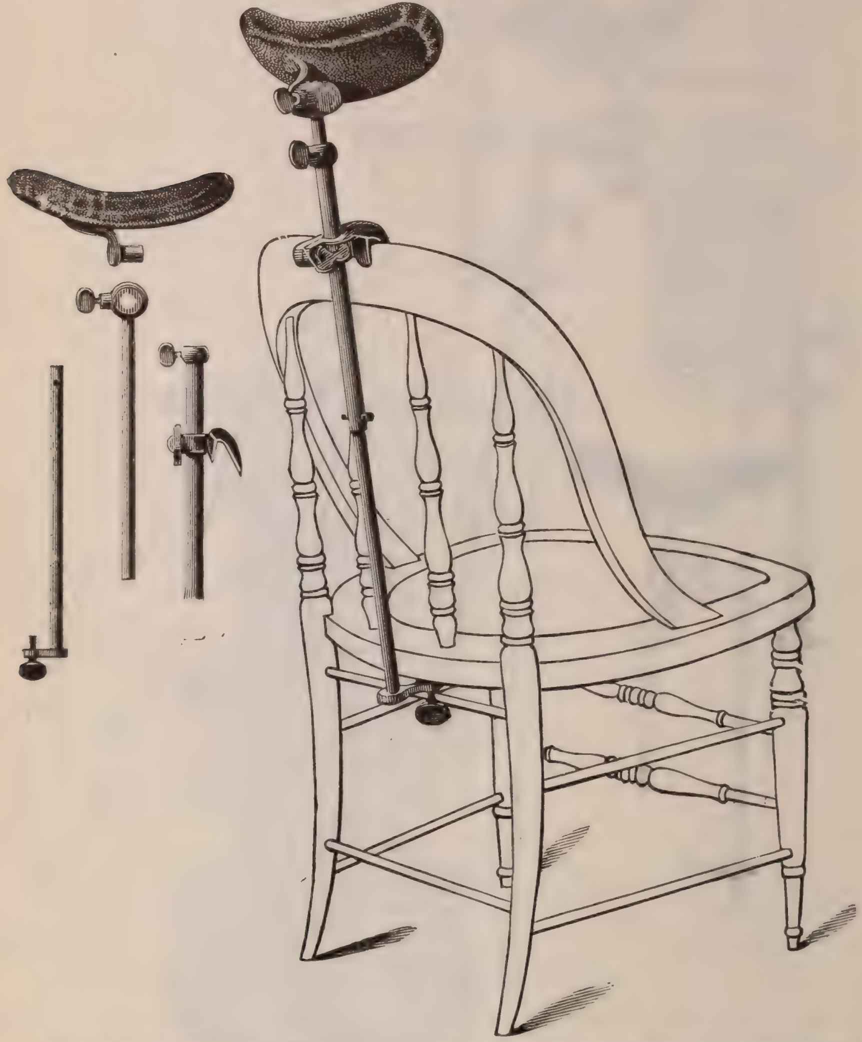
9 West Fayette Street Baltimore Md.

Price Reduced!

SNOWDEN & COWMAN MFG. CO.'S

IMPROVED–

Portable Head-Rest.

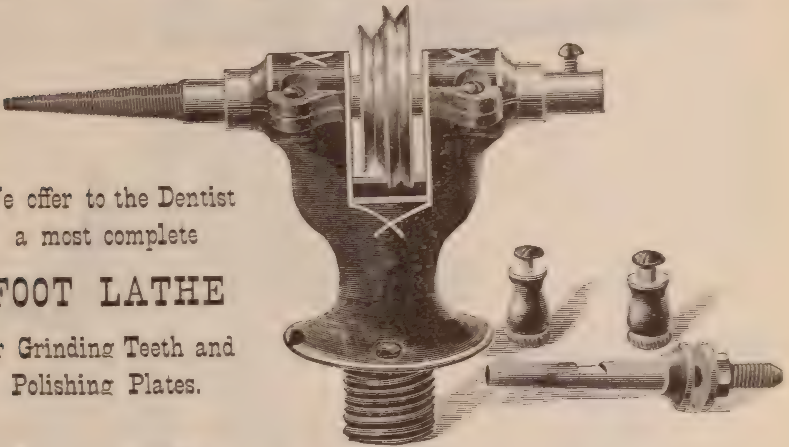


This Head-Rest can be attached to any chair, is very firm, and can be raised, lowered or moved backward or forward without interfering with attachment to the chair. Handsomely painted and bright parts nickel-plated.

It weighs only 4 lbs., and occupies a space only of 13 x 4 inches. PRICE, $4.50.

Price Reduced.

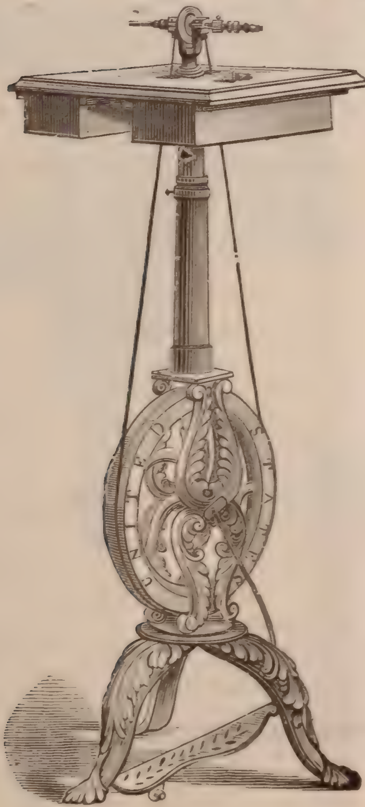
UNITED STATES LATHE.



We offer to the Dentist
a most complete

FOOT LATHE

for Grinding Teeth and
Polishing Plates.



It has been gotten up in a superior manner, great care having taken to make it durable and efficient. It has a movable column and table, which is capable of being elevated eight inches. to accommodate the operator in either a sitting or standing posture.

It can be packed in a box sixteen inches square, and can be set up in a few minutes, presenting a very neat and pleasing appearance, suitable for the office or laboratory. It is finished in bronze, and runs very light and steady.

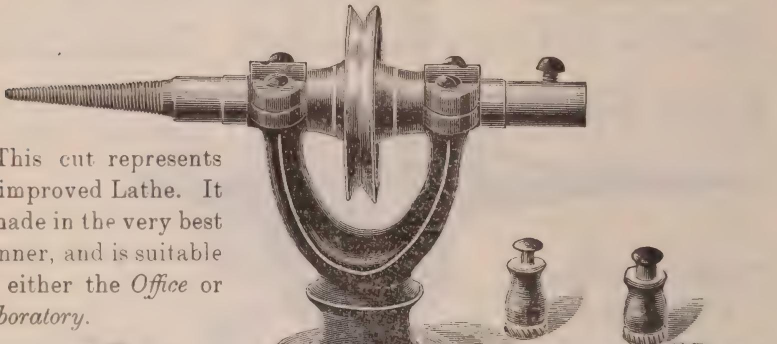
Price of Lathe complete with Short Spindle, as per cut,	$15.00
Price of Lathe complete with Long Spindle,	15.00
Price of Stand only, including Cord and and Coupling,	11.00

Snowden & Cowman Mfg. Co.,

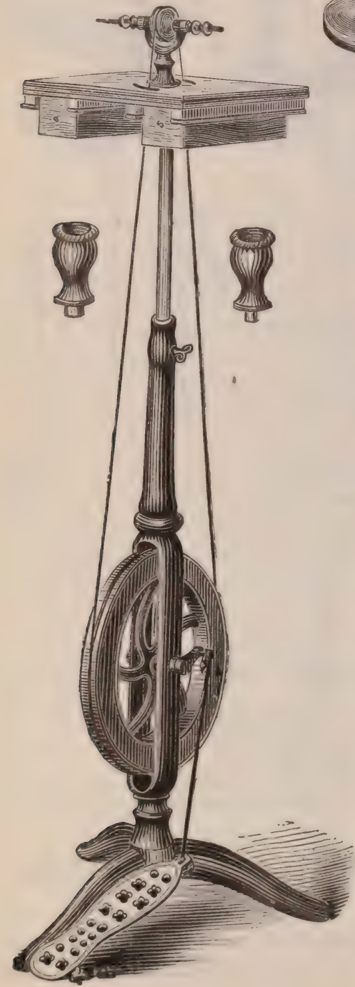
9 W. Fayette Street,

BALTIMORE, MD

AMERICAN LATHE, PRICE REDUCED.



This cut represents an improved Lathe. It is made in the very best manner, and is suitable for either the *Office* or *Laboratory*.



It has a solid spindle, one end of which is a taper screw for brush or felt wheels, and also, a space for a large corundum wheel. The other side of the spindle has a space for a large corundum wheel and a screw to receive the chucks, on which very small corundum wheels can be placed.

It has a movable column and table, which is capable of being elevated ELEVEN inches, to accommodate the operator in either a sitting or standing posture.

Either end of the spindle can be thrown towards the operator, if more convenient, by the set screw at the top of the column.

We also make for this Lathe a Socket Spindle—similar to our U. S. Lathe Short Spindle.

Price of Lathe, as per cut, with two Chucks, - - - -	$14.00
Price of Lathe, with Socket Spindle, with two Chucks, - -	14.00
Price of Lathe, with Extra Large Driving Wheel, - - -	15.00
Chucks, extra, - - - -	.15

☞ No charge for Boxing.

SNOWDEN & COWMAN MFG. CO.,

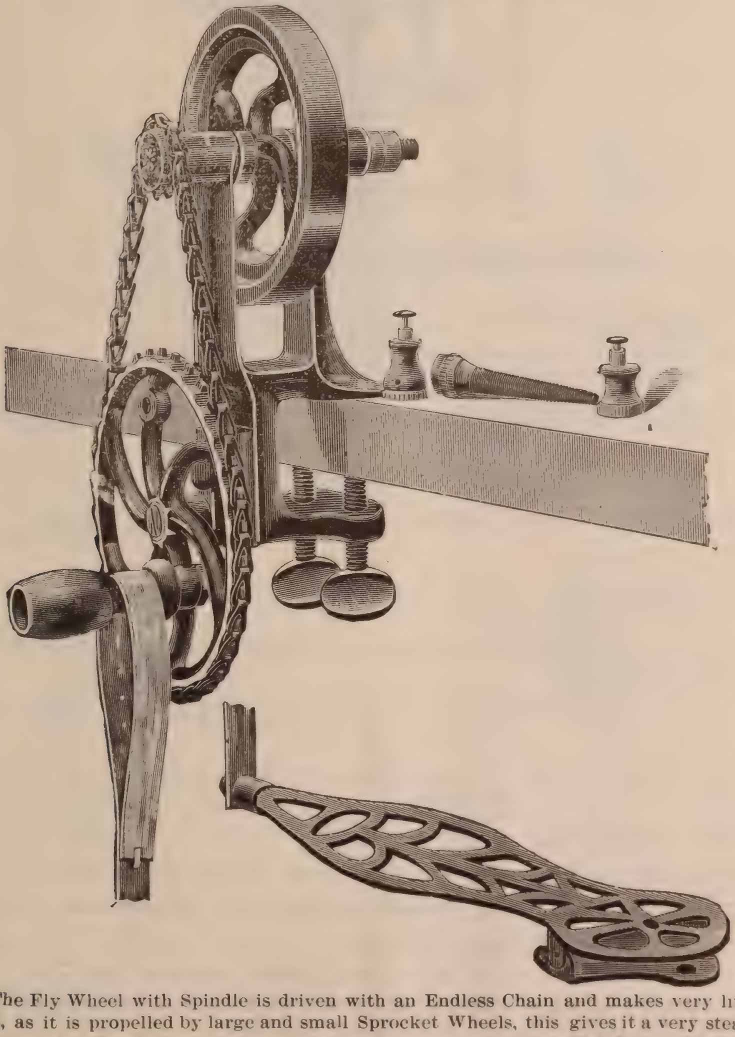
9 W. Fayette Street, Baltimore

SOMETHING NEW FOR TRAVELLING DENTISTS.

LINK CHAIN LATHE,

TO BE USED EITHER BY HAND OR FOOT POWER.

PRICE, - $7.00.



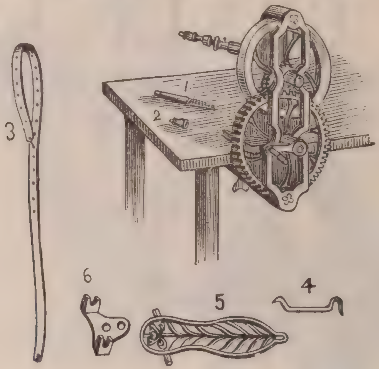
The Fly Wheel with Spindle is driven with an Endless Chain and makes very little noise, as it is propelled by large and small Sprocket Wheels, this gives it a very steady movement and does not require as much power as a geared lathe. It is fastened to table or bench by two Thumb Screws which make it impossible to turn when both are screwed up. It is very light and can be carried in a small satchell.

Snowden & Cowman Mfg. Co.,

9 W. Fayette Street, BALTIMORE, MD.

PRICE REDUCED.

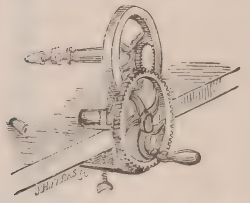
Portable Hand or Foot Lathe.



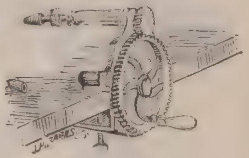
The above is a cut of a PORTABLE HAND OR FOOT LATHE, which is very efficient, manufactured for the traveling dentist; weighs under 7 pounds, and occupies the space of 6 by 9 inches. Members of the profession who have seen it pronounce it first rate.

Price, complete, - - - - -	$5 50
Without Foot Attachment, - - -	5 00

Hand Fly Wheel Lathe.



Hand Lathe.



HAND FLY WHEEL LATHE.—It is intermediate between the Hand Lathe, and the Hand and Foot Lathe; it weighs only three pounds and is a first rate Lathe. - - PRICE, $4 50

HAND LATHE.—It is small, strong and durable, and weighs only two and a quarter pounds; we have sold a large number of these Lathes,—giving great satisfaction. - - PRICE $4 00

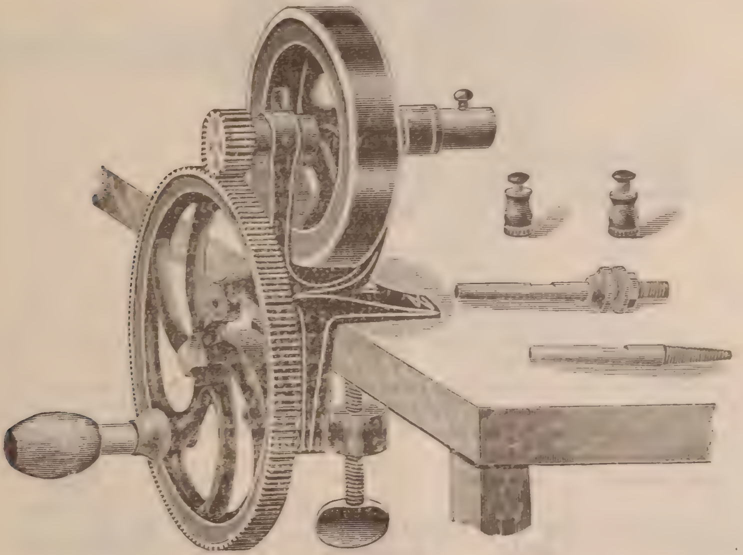
☞ All of the cog wheels of our Lathes are turned and cut on a machine, and are uniform, which makes them run true and with little noise.

SNOWDEN & COWMAN MF'G CO.,

No. 9 West Fayette St., Baltimore.

NEW HAND FLY WHEEL LATHE.

This Lathe is made larger and heavier and can be used with foot. It runs very steady and makes a good lathe for either Office Laboratory or to carry around. It is very neat.



PRICE, - - - - - $5 00
" with Foot Attachment and Strap, 5 50.

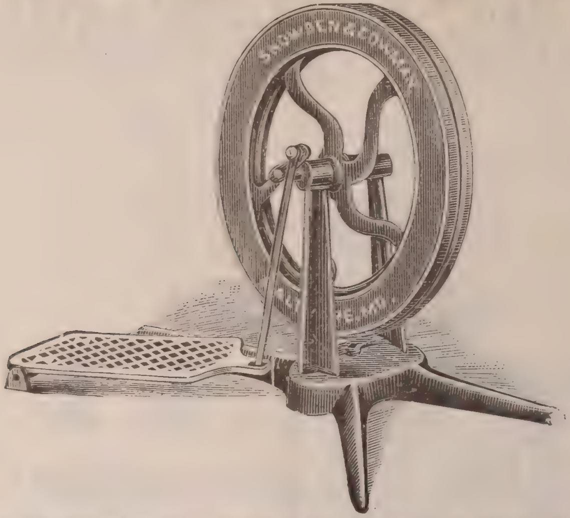
'The proof of the pudding is in the eating."

If the experience of dentists generally did not prove OUR GOLD AND PLATINA ALLOY a superior filling they would not be willing to pay nearly double more for it than the price of common amalgams. I suppose there is not another alloy or amalgam so generally used by our better class of dentists.

Welch's Alloy, 1 oz. $3.00; 2 oz. $5.50, 4 oz. $10.00; 10 oz. $22.00.
Welch's Amalgam, 1 oz. $2.00; 2 oz. $3.50; 4 oz. $7.00; 10 oz. $15.00.
Welch's Oxiphosphate, large $1.50; medium $1.00.
Liquids or powders, large 75 cts.; medium 50 cts.

T. B. WELCH, - - - - Vineland, N. J.

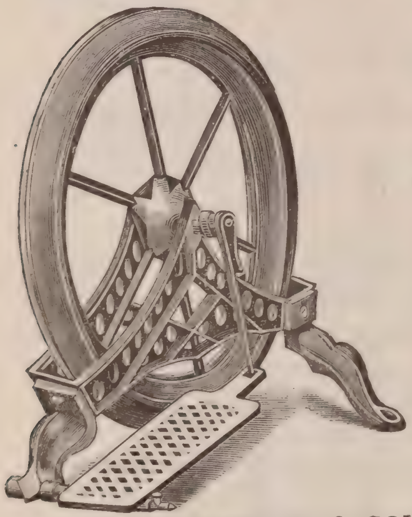
FLY WHEEL, No. 1, NEW.—Price Reduced.



This Fly Wheel weighs 30 lbs., with diameter of wheel 15 inches. The stand is the stiffest and steadiest of any driving wheel in the market. Owing to the position of the feet and the peculiar arrangement of the treadle, the wheel has an immense power and is very light running. In boxing remove pin that connects treadle with rod and fold treadle by side of the wheel. Weight complete, 46 lbs.

Price Boxed, - - - - - - **$7.00**

DIAMOND FLY WHEEL.—Price Reduced.



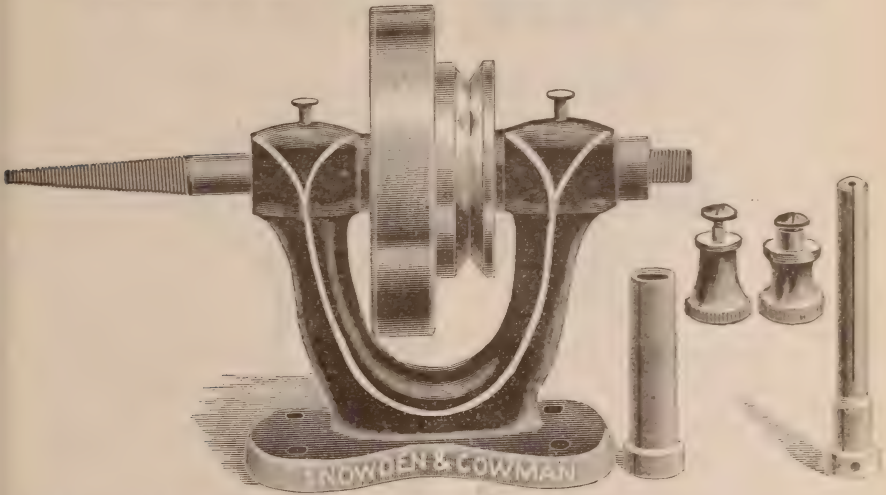
This fly-wheel is eighteen inches in diameter, with wrought iron spokes, in an iron frame, complete in itself, can be set any where, and runs very steady.

It has sufficient power and speed for any Dentist's Lathe Head. The feet are easily detatched, and all can be packed in a smaller box than any other Fly Wheel of its dimensions in the market.

Price Boxed, - - **$7.00.**

SNOWDEN & COWMAN MFG. CO.,
No. 9 W. Fayette Street,
Baltimore.

OUR NEW LATHE HEAD.

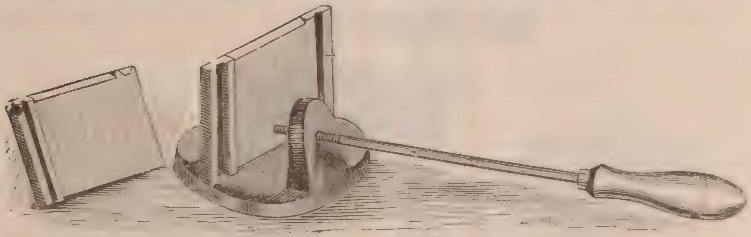


VERY SIMPLE AND EASY RUNNING.
ADJUSTMENT QUICKLY MADE.
VERY DURABLE AND STEADY.

PRICE WITH 4 CHUCKS, - - - - $5.00.

SNOWDEN & COWMAN MFG. CO.'S

INGOT MOULDS.



No. 1, will cast a plate from one half of an inch to two inches in width, also a round, half-round and square bar. - $2.25

No 2, will cast a plate from one half of an inch to two and three quarter inches in width, also a round, half-round and square bar. - - - - - - - $2.75

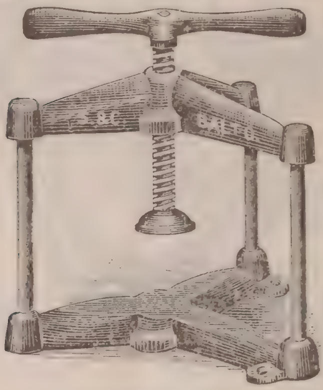
No. 3, will cast a plate 3 inches wide and 4 inches long also round, half-round and square bar, - $3.25

LIBERAL DISCOUNT TO THE TRADE.

Snowden & Cowman Mfg. Co's

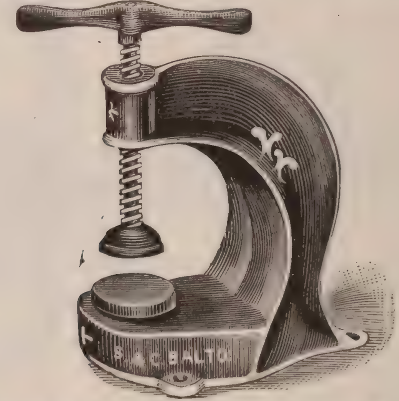
Flask Presses.

No. 1, Old Style Improved.



This Press is intended to close the flask after packing with rubber. It is of great advantage, saving screws and flasks. The upright rods are of wrought iron and the handle of the screw can be detached. They are *well made* and *very strong*, and has been made larger, so that it will take any Flask in the market. Price, - - - - $1.50.

No. 2, New Stvle.



This Press is made of cast iron, very heavy, with steel screw and detachable handle. It has a Pivot Plate to level up the flask, insuring always a central pressure on the flask; will take any flask in the market. Price - - $1.50

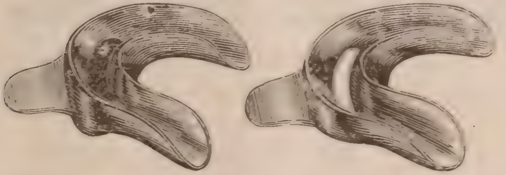
BRITANNIA IMPRESSION CUPS

LONG HANDLES.

We Manufacture the following Sizes and Varieties:

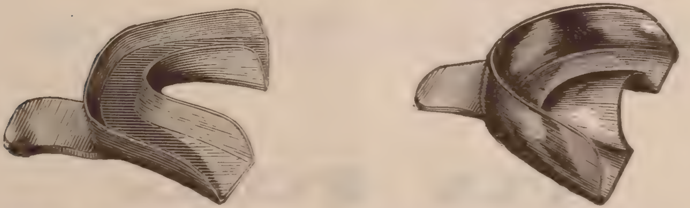
UPPER, Nos. 00, 0, 1, 2, 3, 4, 5, 6, 7.—(No. 00 is the largest size.)
LOWER, " 1, 2, 3, 4, 5. —(No 1 is the largest size.)

PARTIAL LOWER CUPS.



ENCLOSED CAVITY, Nos. 9, 10, 11.—(No. 9 is the largest size.)
OPEN CAVITY, Nos. 6, 7, 8. —(No. 6 is the largest size.)

UPPER AND LOWER CUPS.



PARTIAL UPPER—Flat Bottom, Nos. 8, 9, 10, 11—(No. 8 is the largest.)
FULL LOWER— " " " 12, 13, 14—(No. 12 is the largest.
PRICE..............................**Each**......................**25cts**

SNOWDEN & COWMAN MFG. CO.

9 West Fayette Street, Baltimore Md

Dental Depot,

ESTABLISHED 1856.

SNOWDEN & COWMAN MFG. CO.

MANUFACTURERS OF

Lathes, Head Rests, Vulcanizers, Impression Cups, &c.

AND DEALERS IN

DENTISTS' MATERIALS,

No. 9 W. Fayette St., between Charles & Liberty Sts

BALTIMORE.

GOLD FOIL.

	Per 2 oz.	oz.	½ oz.	¼ oz.	⅛ oz.
Abbey & Sons,		$32.00	$16.00	$8.00	$4.
Valleau's		30.00	15.00	7.50	4.
Ney & Co's.		29.00	15.00	7.50	4.
S. S. White's, ¼ Century,	$58.00	30.00	15.00	8.00	4.
" " Globe,	58.00	30.00	15.00	8.00	4.
" " 1000 Fine,	58.00	30.00	15.00	8.00	4.
R. S. Williams, Cylinders, A,		30.00	15.00	8.00	4.00
" " " B,					
" " Rect. Pellets,					
" " Standard,					
Watt's Crystal,		32.00	16.00	8.00	4.00
E. Rowan & Co.		29.00	15.00	3.20 per 1-10 oz.	
" untrimmed,				5.60 per 1-5 oz.	
"				2.90 per 1-10 oz.	

TIN FOIL.

Ney & Co's--Nos. 4, 6, 8, and 10, - -	40 Cents per Book
S. S. White's, - - - - - - -	30 " " "
Nos. 4, 6, 8 & 10, (extra tough)	40 " " "

SNOWDEN & COWMAN MFG. CO.,

No. 9 West Fayette Street Baltimore

PORCELAIN TEETH.

GREATLY REDUCED.

We keep on hand a large assortment of Teeth of the following Manufacturers, which we

SELL AT THEIR REDUCED PRICES.

The S. S. White Dental Manf. Co.'s

	Each.	$10 lots.	$25 lots.	$50 lots.	$100 lots.	$300 lots.
Plain Rubber & Plate Teeth	.12	.11½	.11	.10	.09	.08
Gum Sectional Rubber, Plain Plate, long Pins, Single Gum Rubber and Gum Plate Teeth,	.12½	.12	.11½	.11	.10	.09

H. D. JUSTI & SON'S.

	Each.	$10 lots.	$25 lots.	$50 lots.	$100 lots.	$300 lots.
Plain Rubber and Plate,	12.	.11½	.11	.10	.09	.08
Gum Sectional Rubber, Plain Plate, Single Gum Rubber and Gum Plate,	.12½	.12	.11½	.11	.10	.09

Sibley's or Wilmington Co.'s Gum or Plain Teeth.

Per Set 14 Gum or Plain,	$ 1 00
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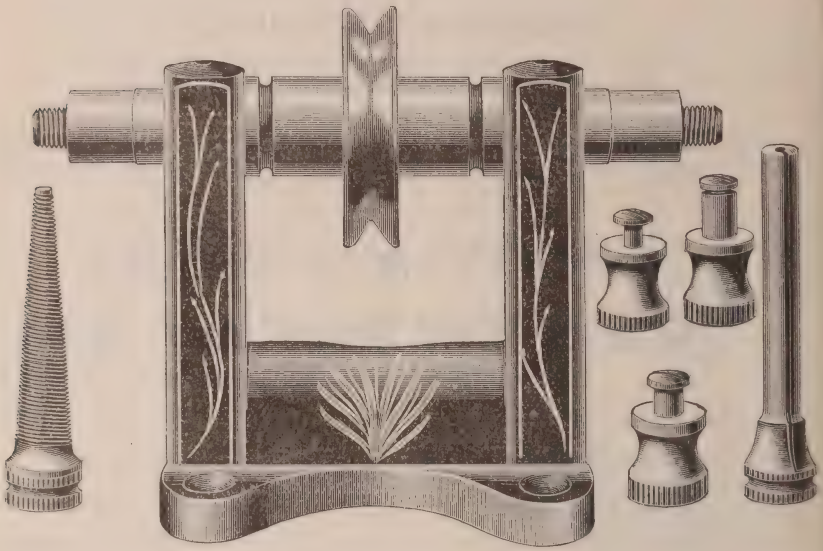

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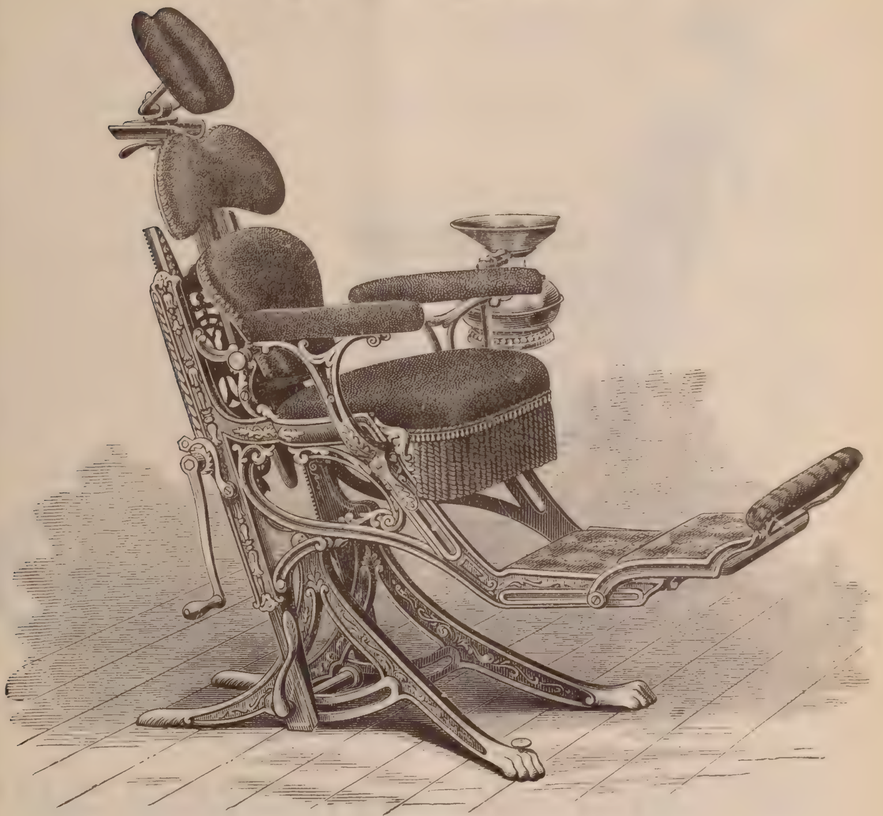

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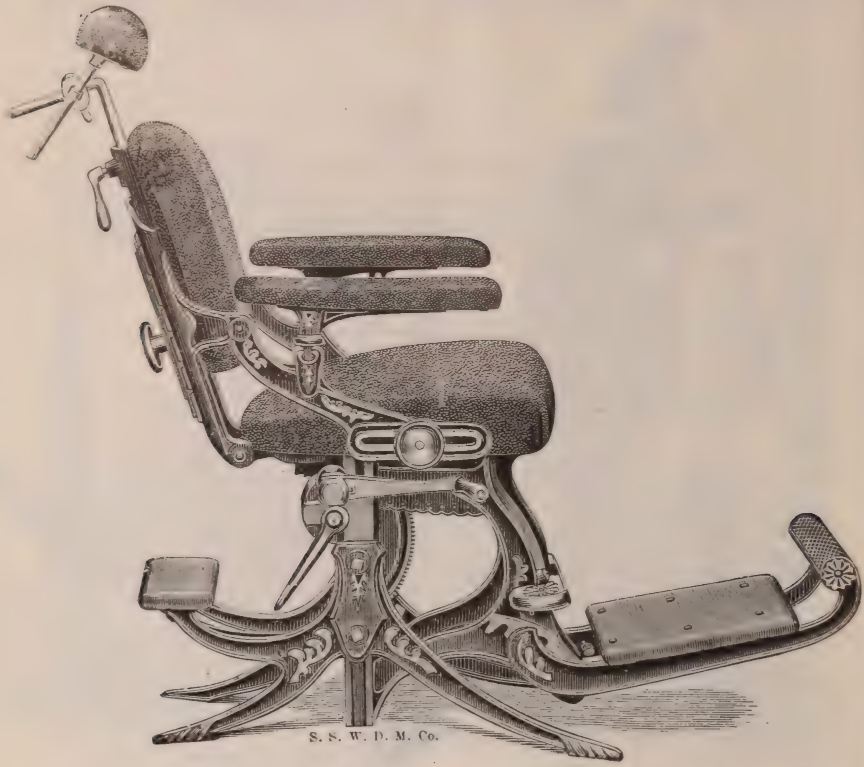

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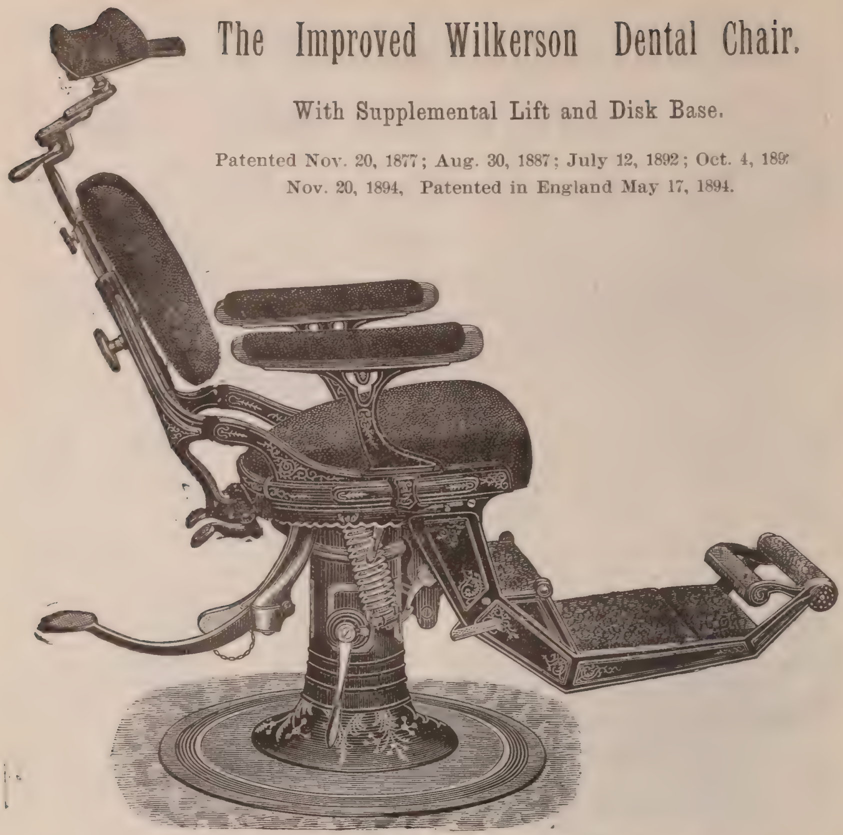

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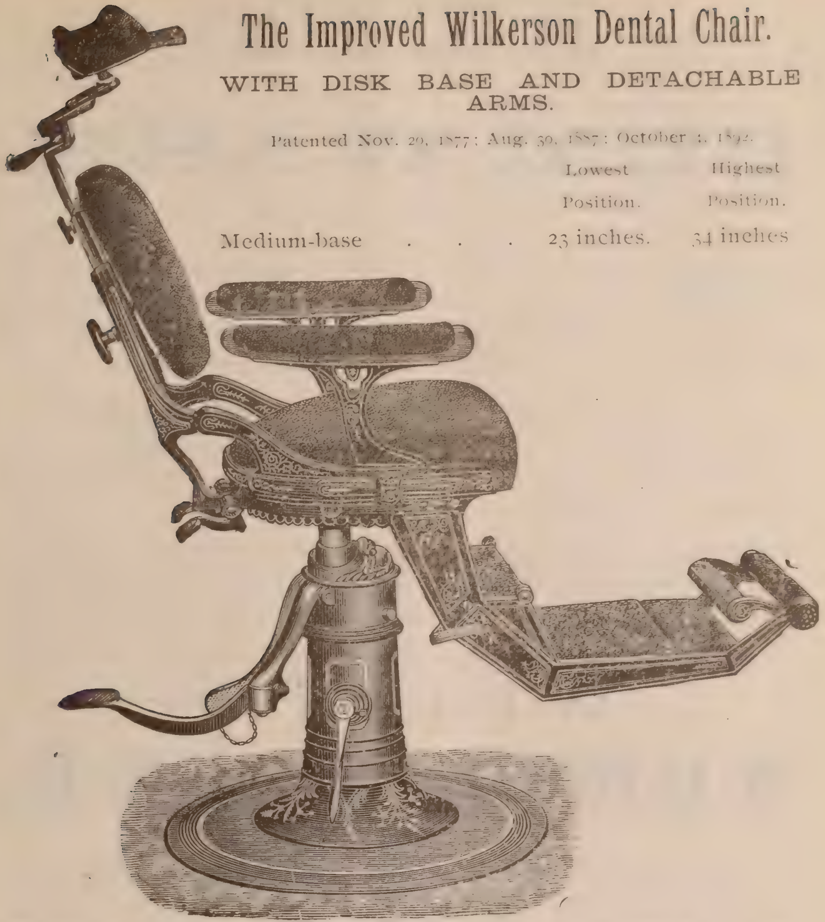

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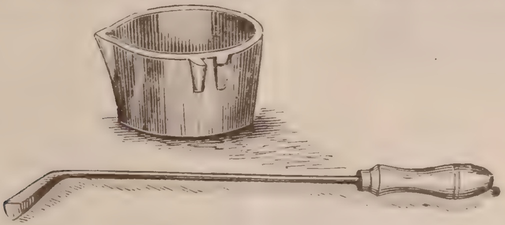

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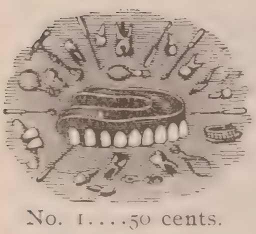

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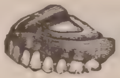

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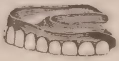

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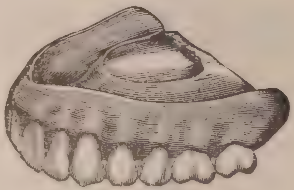

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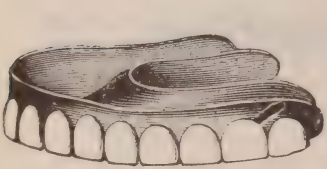

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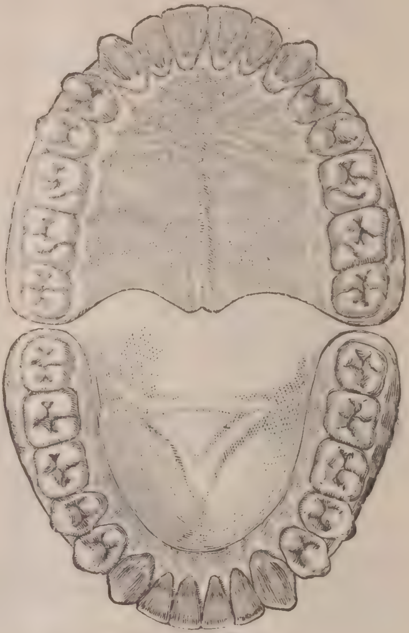

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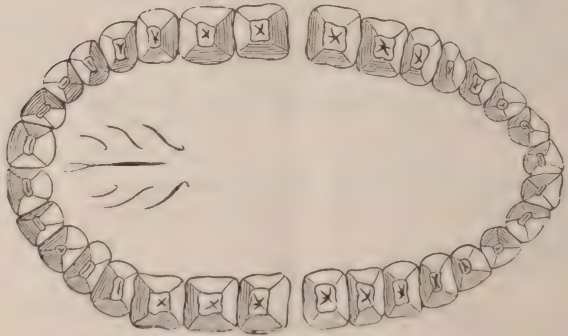

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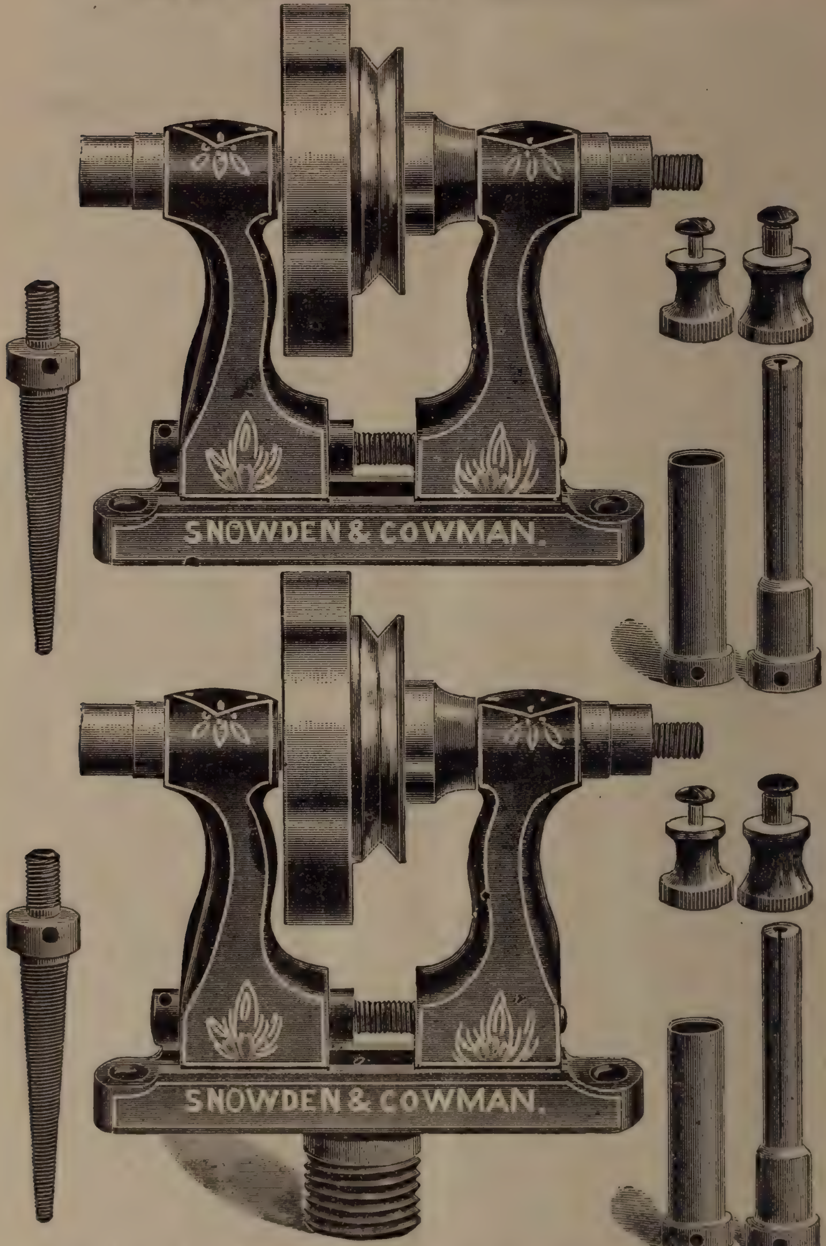
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THE AMERICAN JOURNAL OF DENTAL SCIENCE.

EDITED BY

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RICHARD GRADY, M. D., D. D. S.

Vol. 31. THIRD SERIES No. 11.

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01

This Institution was chartered in 1839 by an Act of the General Assembly of Maryland, and is the oldest and most widely known Dental College in the world. The majority of the eminent practitioners of dentistry in this country and Europe are graduates of the Baltimore College. The College Building is one of the largest and finest structures of the kind in this country, and the collection of specimens in the Museum cannot be excelled. The number of patients daily visiting the Infirmary has been so great that the Faculty have been compelled to add additional space and chairs to the already large and well-arranged Operating Hall. All such patients are operated on by the students, under the careful supervision of the Professors and Demonstrators.

The Annual Course of Instructions will commence on October 1st each year, and continue until the beginning of March following. The first weeks of the Session are devoted to Lectures on practical subjects especially the "Filling of Teeth," and Construction of Artificial Teeth, Clinics, Infirmary Practice and Demonstrations

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*See cut of bit-locking device on opposite page.

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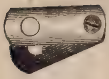

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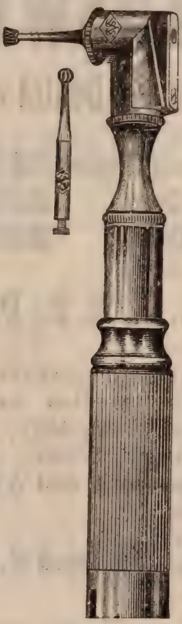
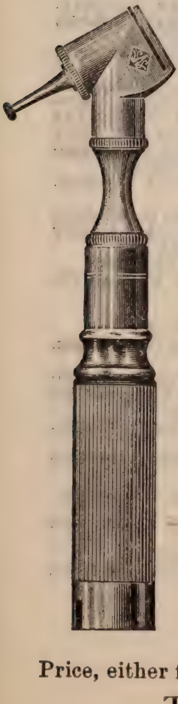
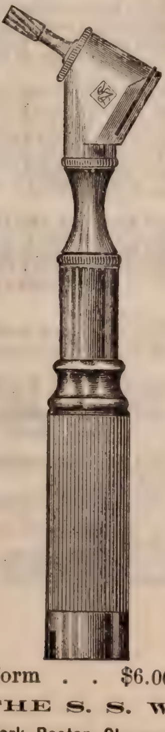


Acute.



Obtuse.



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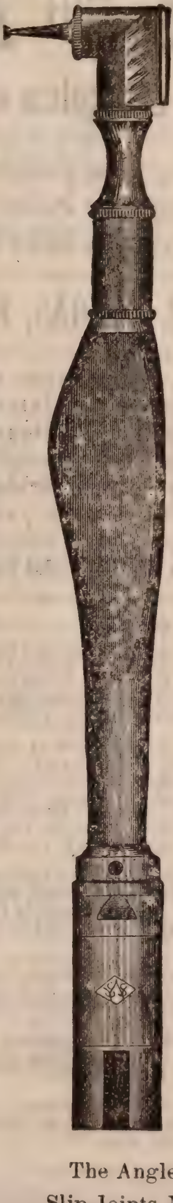
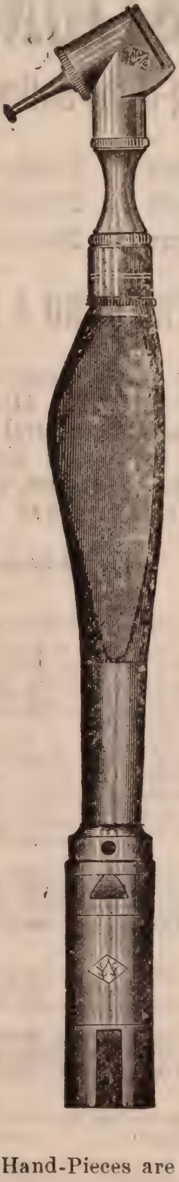


Acute.



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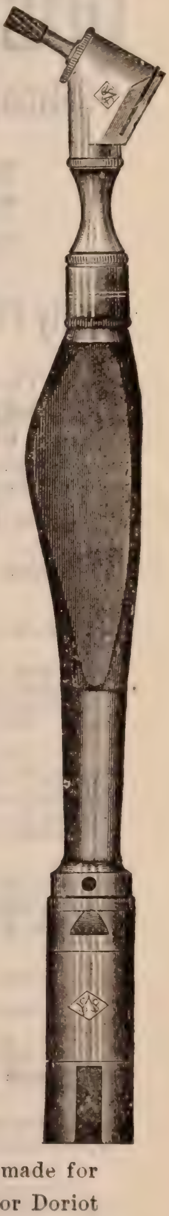

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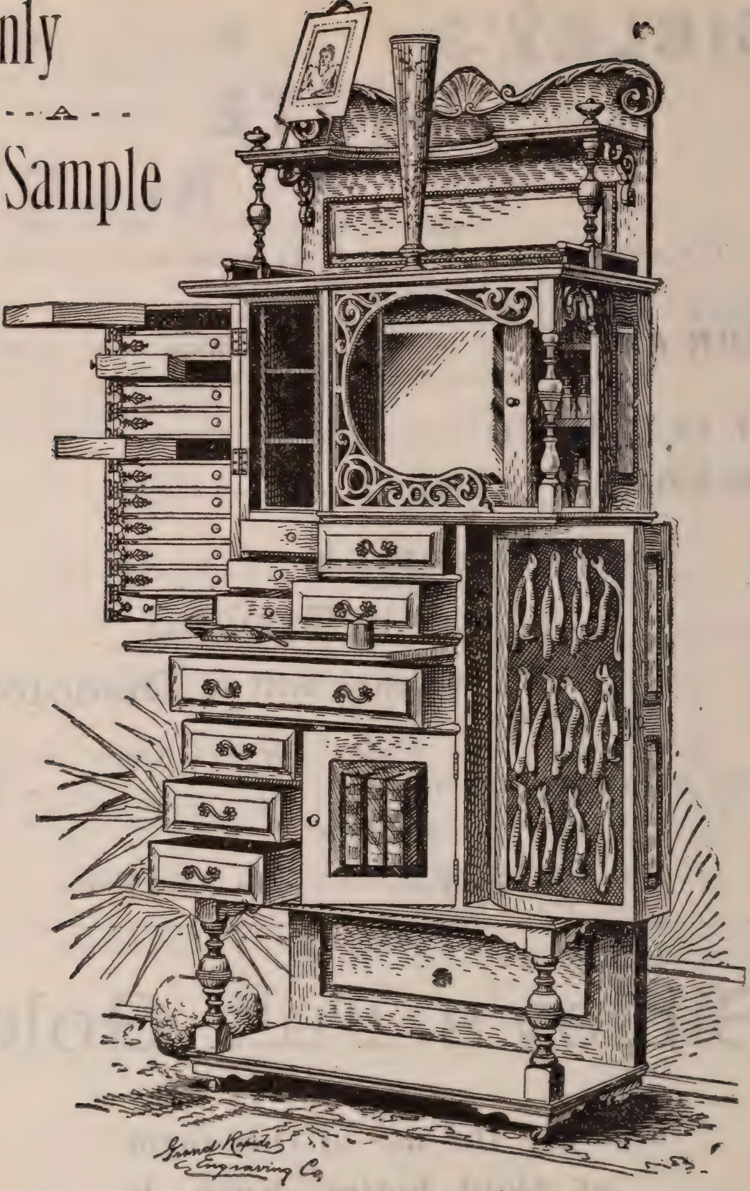

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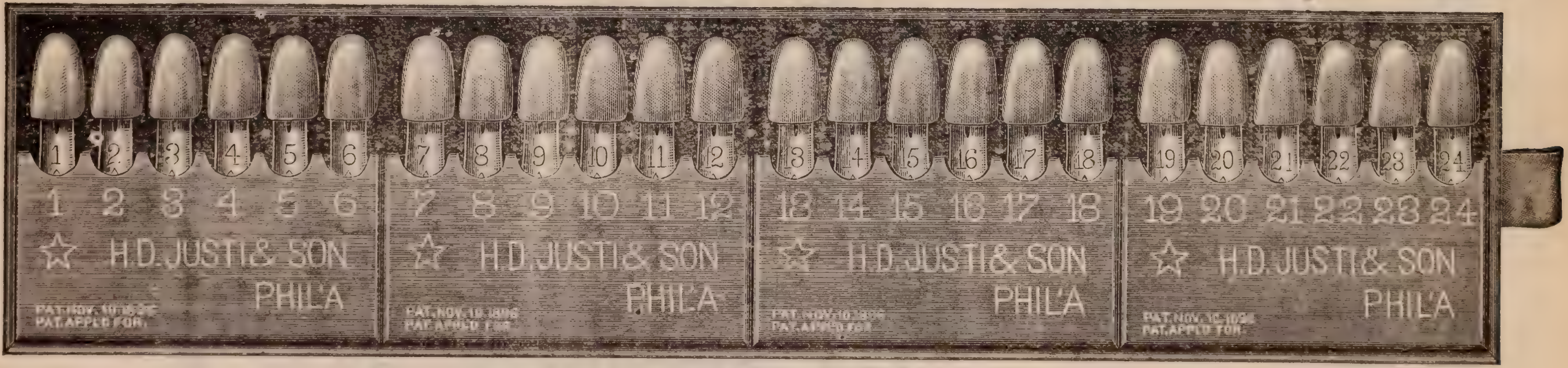

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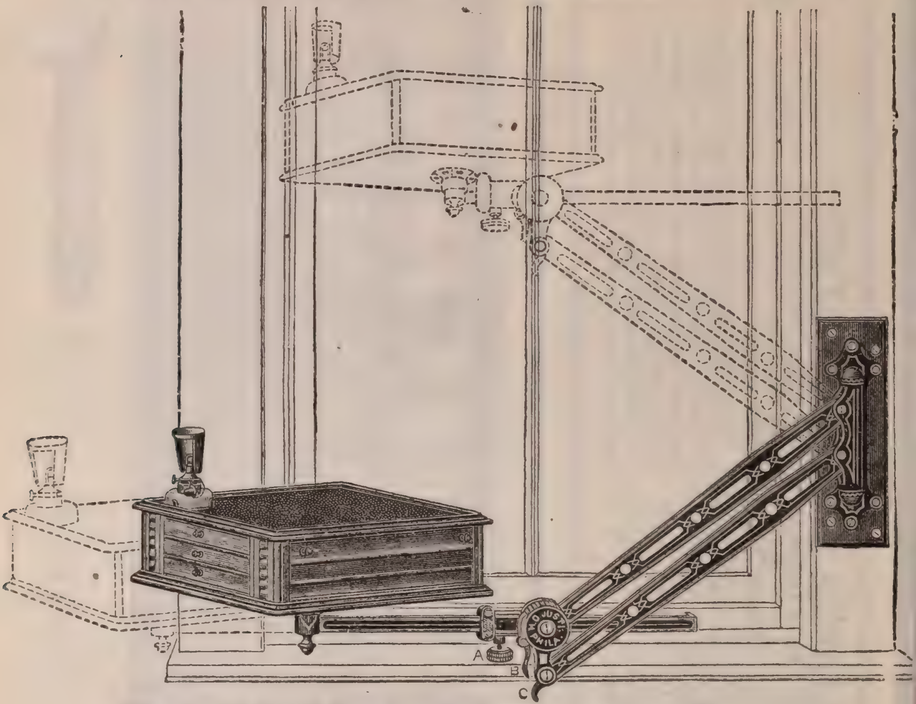

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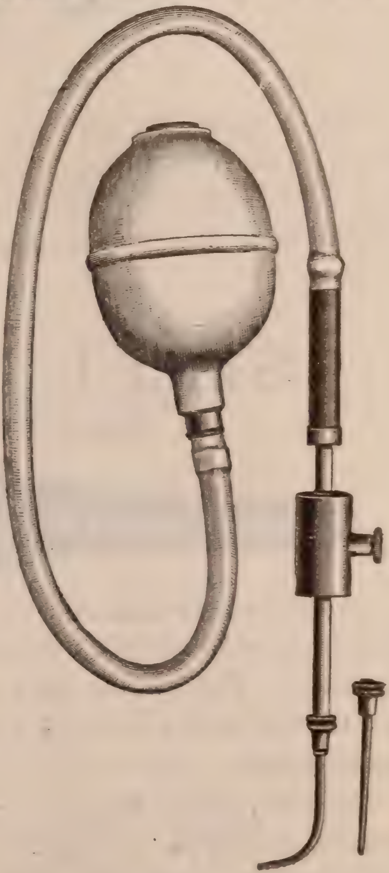

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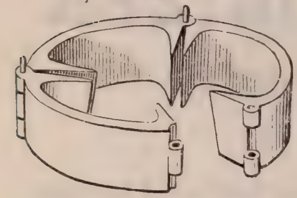

Fig. 2.

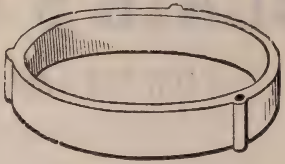

Fig 3.

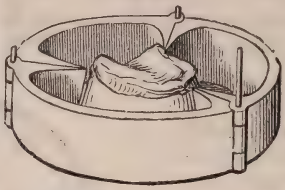

Fig. 1 represents the lower section of the Flask, slightly opened, to show the Joints. Fig. 2 is the upper section. When ready for use, the lower section is closed and confined by a Pin, and the Plaster Model placed in it, as represented in Fig, 3.

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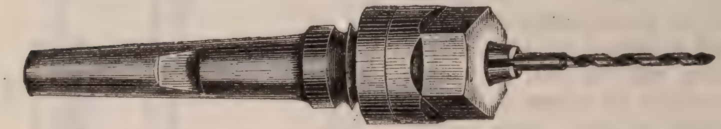

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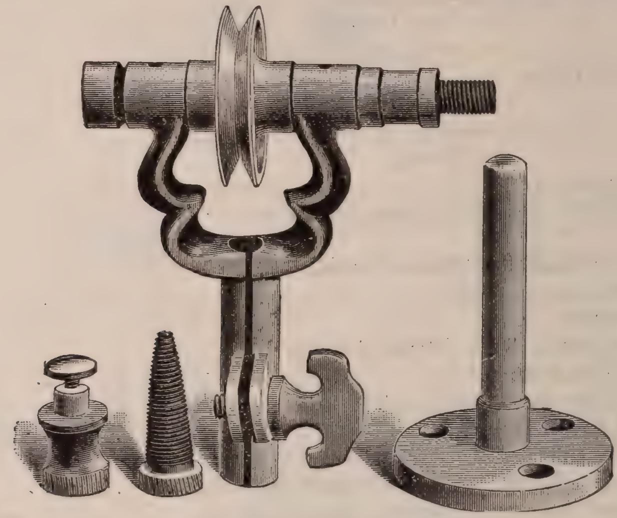
9 West Fayette Street, Baltimore, Md.

ENGINE LATHE HEAD FOR BRIDGE AND CROWN WORKERS.



THIS LATHE HEAD CAN BE ATTACHED TO SHAW ENGINE BY SLIPPING SOCKET OVER STANDARD AND TIGHTENING THUMB SCREW. IT IS VERY LIGHT AND NEATLY NICKEL PLATED. IT RUNS VERY SMOOTHLY AND LIGHTLY. IT ALSO CAN BE MOUNTED ON TABLE AS SHOWN IN CUT BY THE SMALL ATTACHMENT. . . . .

PRICE COMPLETE - - $4.00.

VULCANIZERS

Our Own Manufacture.

WE ARE MAKING 3 STYLES.

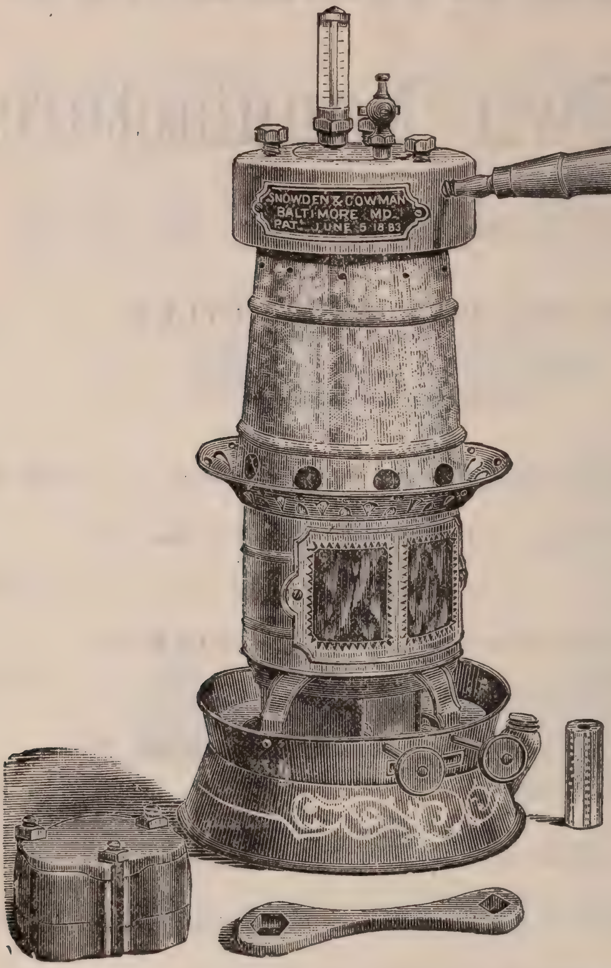
Complete with Coolidge's Gas and Time Regulator, . .	$25 00
Complete with Gage and Blow-off Cock for Gas or Kerosene, ...	21 00
Complete with Thermometer and Blow-off Cock for Kerosene or Gas, ...	18 00
Vulcanizers complete with Two Brass Flasks, instead of Iron Flasks, adds	1 50
Vulcanizers complete without Two Iron Flasks, deduct	1 50
Vulcanizers complete, less Kerosene Stove, deduct . .	1 70
Vulcanizers complete, less Gas Stove, deduct	1 00
Large Iron Flasks, each	1 00
Large Brass Flasks, each	1 50

SNOWDEN & COWMAN MFG. CO.

9 W. Fayette Street, BALTIMORE, MD.

SNOWDEN & COWMAN MFG. CO.'S

New Patent Vulcanizer.

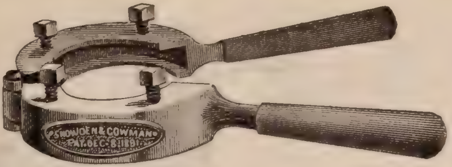


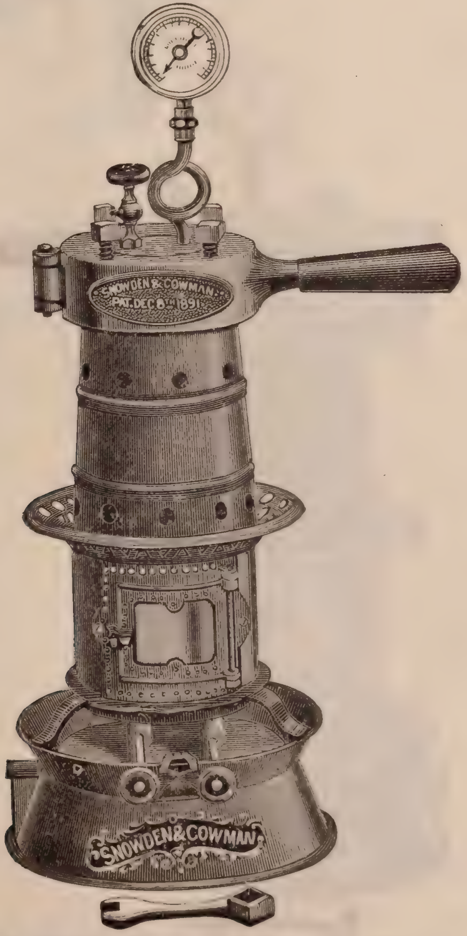
Complete for Kerosene or Gas, with Two Large Malleable Iron Flasks, ***$18.00***

Gas Stove.

PATENTED DEC. 8, 1891.

Snowden & Cowman Mfg. Co.'s Hinged Clamp Vulcanizer.



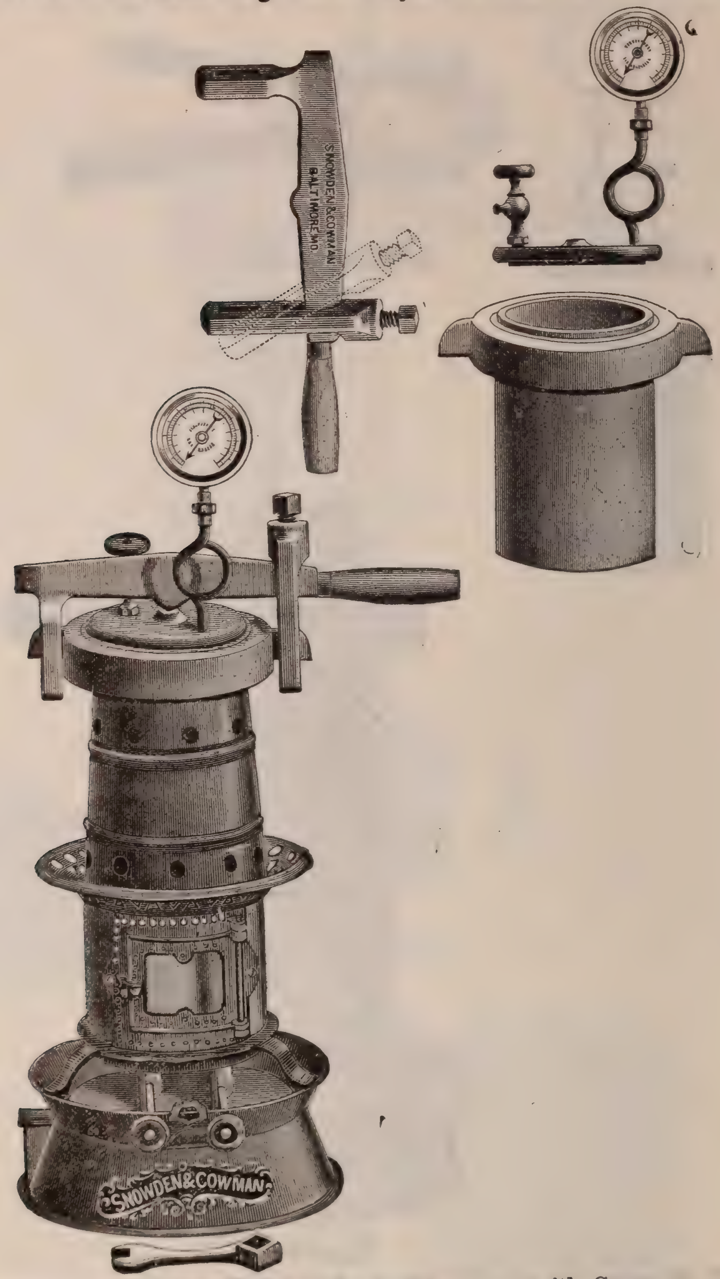


Price complete with 2 Flasks Improved for Gas or Kerosene with Guage as represented,..................... $21.00

With Thermometer and without Guage,.......... 18.00

CIRCULARS ON APPLICATION.

Snowden & Cowman Mfg. Co.'s Improved Cross-Bar Vulcanizer.



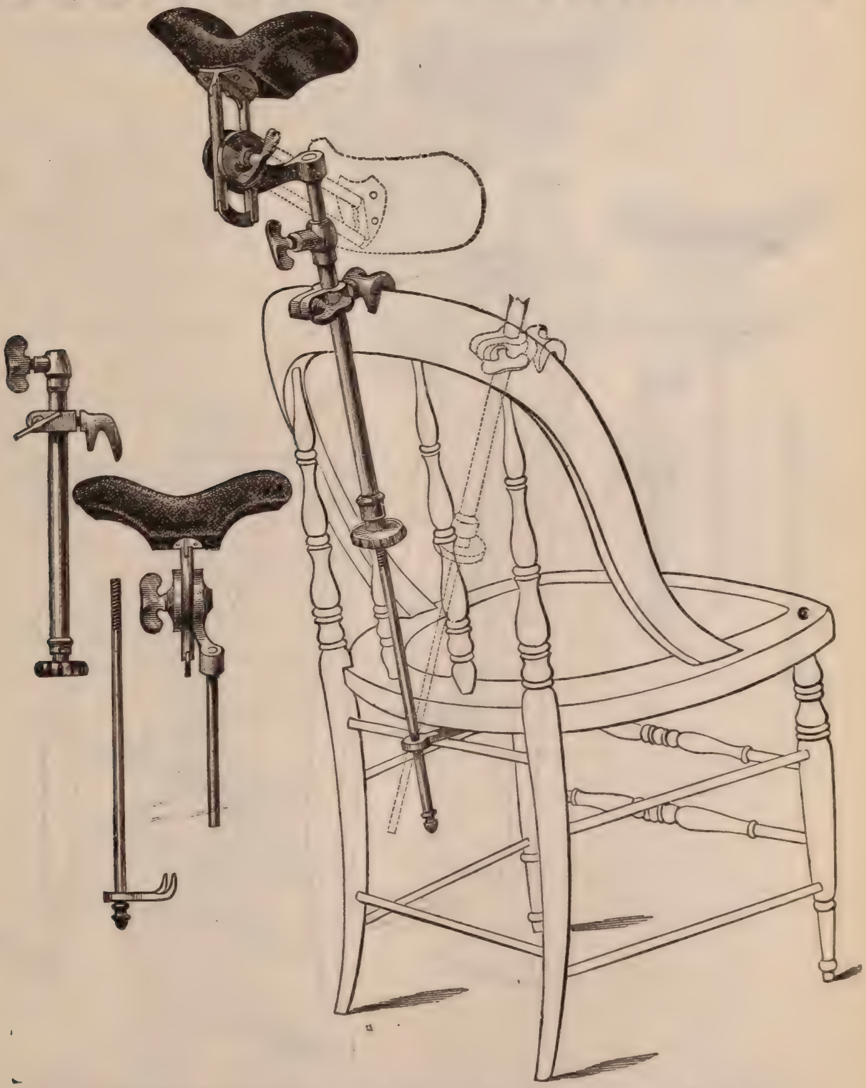
Price complete with two Flasks for Gas or Kerosene, with Guage as represented, ... $21.00
With Thermometer and without Guage,................................ .... 18.00.

CIRCULARS ON APPLICATION.

Snowden & Cowman Mfg. Co.'s

—NEW—

Portable Head-Rest.



PRICE, Full Nickel Plated, - - - $10.00

—MANUFACTURED AND FOR SALE BY—

SNOWDEN & COWMAN MFG. CO.

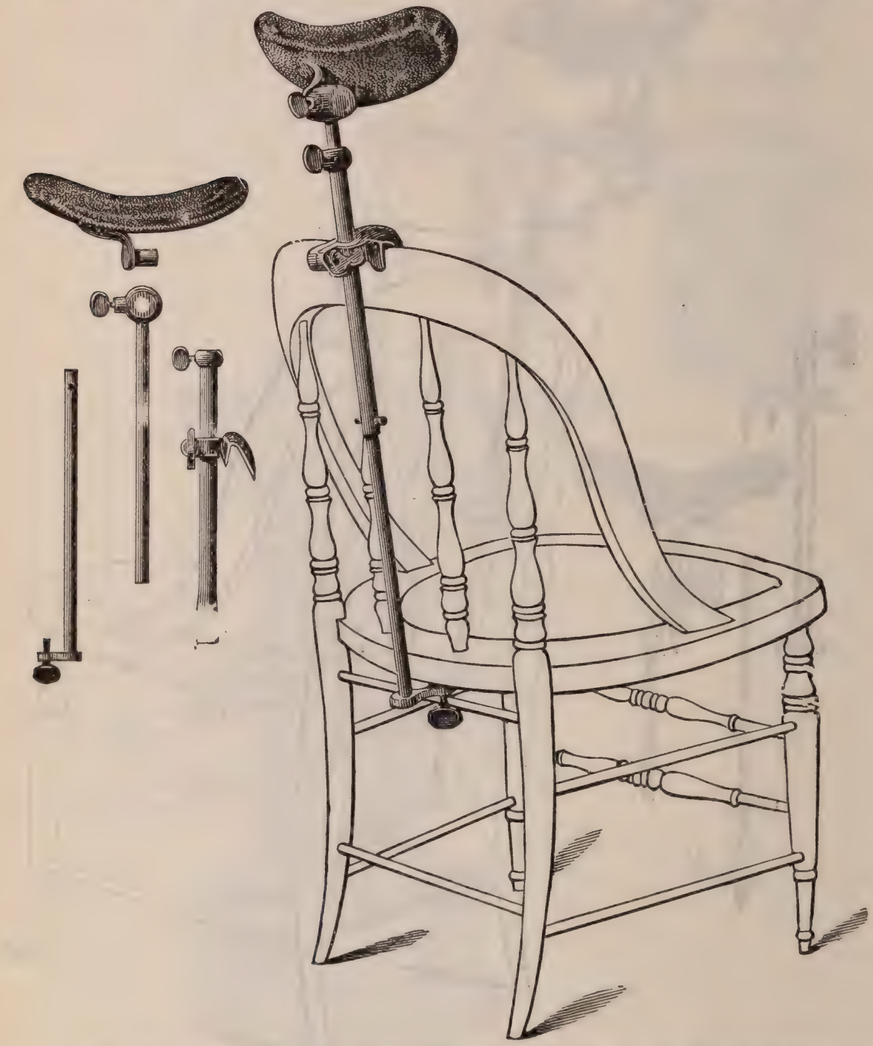
9 West Fayette Street Baltimore Md.

Price Reduced!

SNOWDEN & COWMAN MFG. CO.'S

IMPROVED-

Portable Head-Rest.

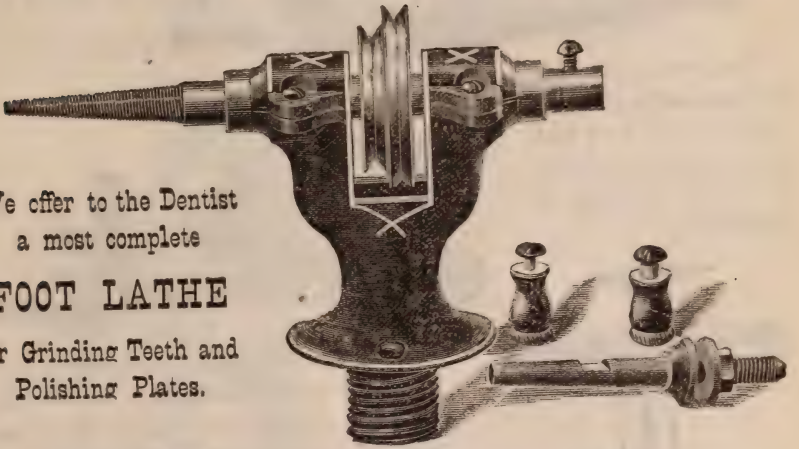


This Head-Rest can be attached to any chair, is very firm, and can be raised, lowered or moved backward or forward without interfering with attachment to the chair. Handsomely painted and bright parts nickel-plated.

It weighs only 4 lbs., and occupies a space only of 13 x 4 inches. PRICE, $4.50.

Price Reduced.

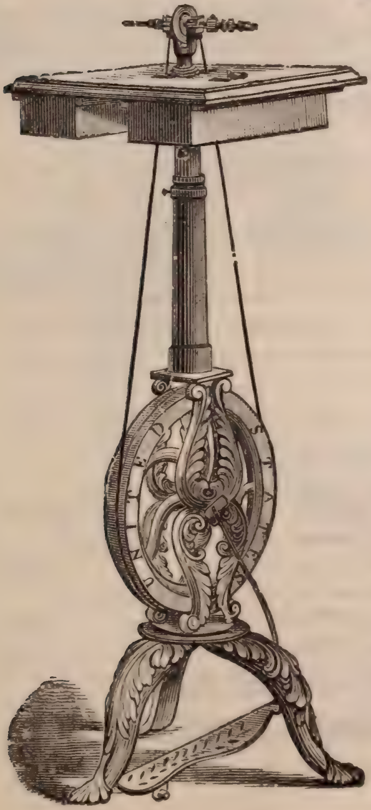
UNITED STATES LATHE.



We offer to the Dentist
a most complete

FOOT LATHE

for Grinding Teeth and
Polishing Plates.



It has been gotten up in a superior manner, great care having taken to make it durable and efficient. It has a movable column and table, which is capable of being elevated eight inches, to accommodate the operator in either a sitting or standing posture.

It can be packed in a box sixteen inches square, and can be set up in a few minutes, presenting a very neat and pleasing appearance, suitable for the office or laboratory. It is finished in bronze, and runs very light and steady.

Price of Lathe complete with Short Spindle, as per cut,	$15.00
Price of Lathe complete with Long Spindle,	15.00
Price of Stand only, including Cord and and Coupling,	11.00

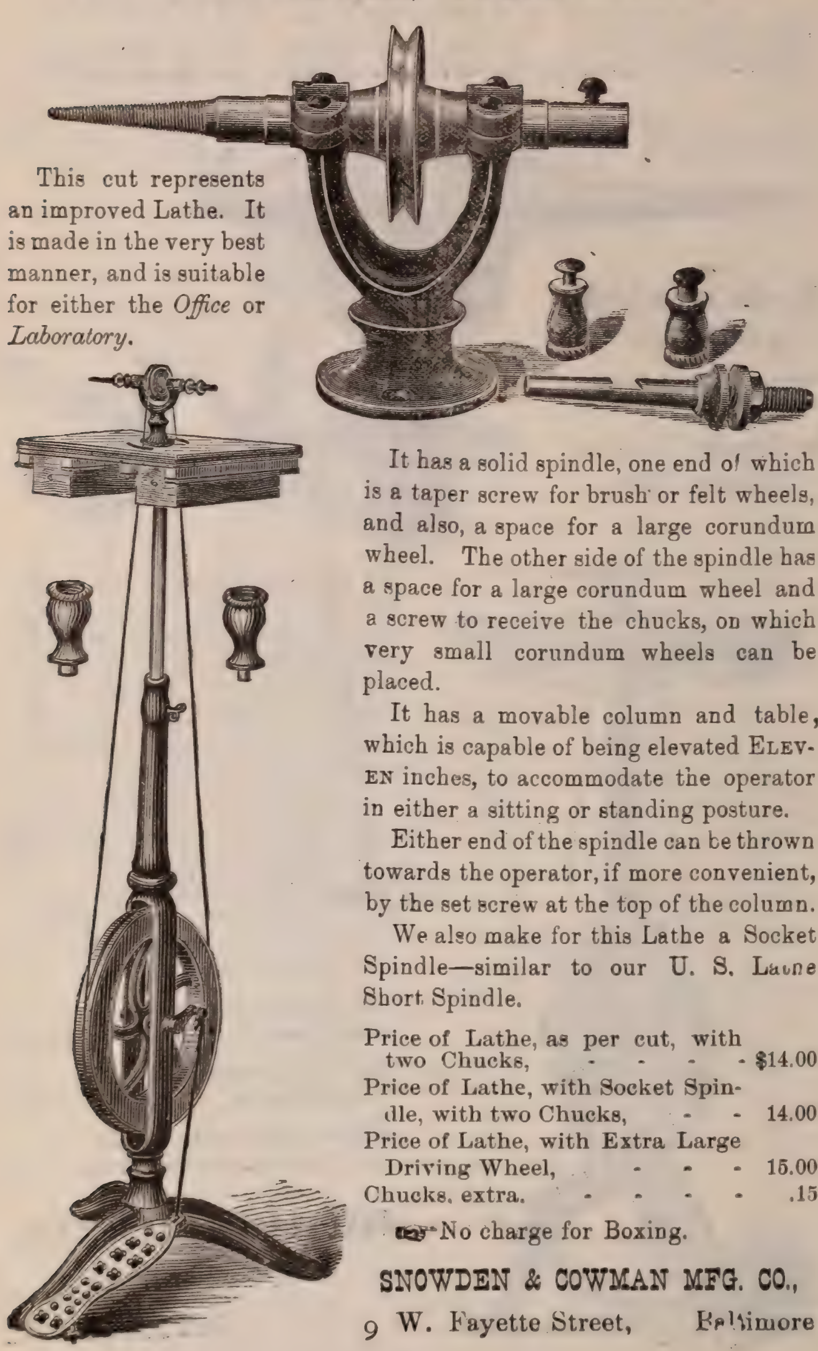
Snowden & Cowman Mfg. Co.,

9 W. Fayette Street,

BALTIMORE, MD

AMERICAN LATHE, PRICE REDUCED.

This cut represents an improved Lathe. It is made in the very best manner, and is suitable for either the *Office* or *Laboratory*.



It has a solid spindle, one end of which is a taper screw for brush or felt wheels, and also, a space for a large corundum wheel. The other side of the spindle has a space for a large corundum wheel and a screw to receive the chucks, on which very small corundum wheels can be placed.

It has a movable column and table, which is capable of being elevated ELEVEN inches, to accommodate the operator in either a sitting or standing posture.

Either end of the spindle can be thrown towards the operator, if more convenient, by the set screw at the top of the column.

We also make for this Lathe a Socket Spindle—similar to our U. S. Laune Short Spindle.

Price of Lathe, as per cut, with two Chucks, - - - -	$14.00
Price of Lathe, with Socket Spindle, with two Chucks, - -	14.00
Price of Lathe, with Extra Large Driving Wheel, - - -	15.00
Chucks, extra. - - - -	.15

☞ No charge for Boxing.

SNOWDEN & COWMAN MFG. CO.,

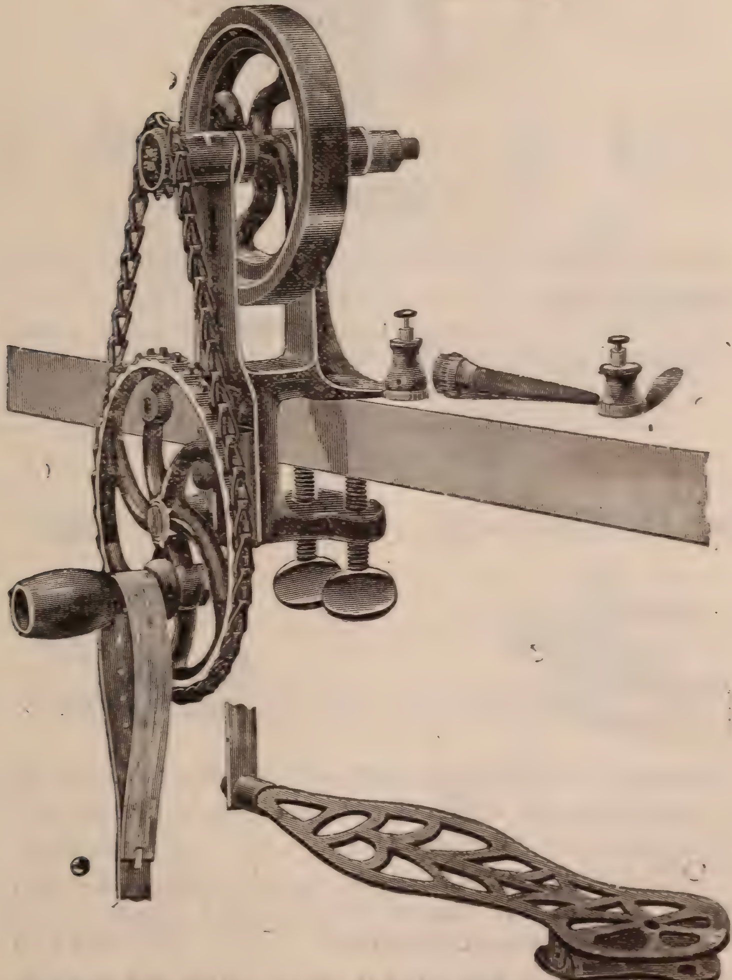
9 W. Fayette Street, B..timore

SOMETHING NEW FOR TRAVELLING DENTISTS.

LINK CHAIN LATHE,

TO BE USED EITHER BY HAND OR FOOT POWER.

PRICE, - $7.00.



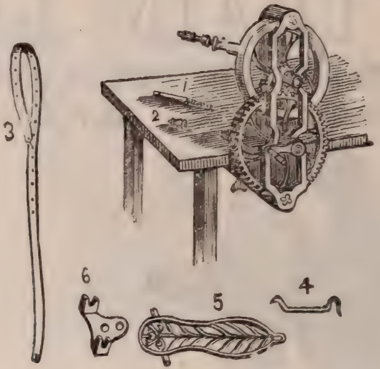
The Fly Wheel with Spindle is driven with an Endless Chain and makes very little noise, as it is propelled by large and small Sprocket Wheels, this gives it a very steady movement and does not require as much power as a geared lathe. It is fastened to table or bench by two Thumb Screws which make it impossible to turn when both are screwed up. It is very light and can be carried in a small satchell.

Snowden & Cowman Mfg. Co.,

9 W. Fayette Street, BALTIMORE, MD.

PRICE REDUCED.

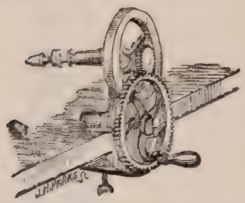
Portable Hand or Foot Lathe.



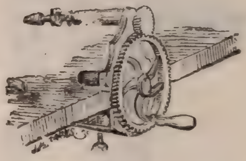
The above is a cut of a PORTABLE HAND OR FOOT LATHE, which is very efficient, manufactured for the traveling dentist; weighs under 7 pounds, and occupies the space of 6 by 9 inches. Members of the profession who have seen it pronounce it first rate.

Price, complete, - - - - -	$5 50
Without Foot Attachment, - - -	5 00

Hand Fly Wheel Lathe.



Hand Lathe.



HAND FLY WHEEL LATHE.—It is intermediate between the Hand Lathe, and the Hand and Foot Lathe; it weighs only three pounds and is a first rate Lathe. - - PRICE, $4 50

HAND LATHE.—It is small, strong and durable, and weighs only two and a quarter pounds; we have sold a large number of these Lathes,—giving great satisfaction. - - PRICE $4 00

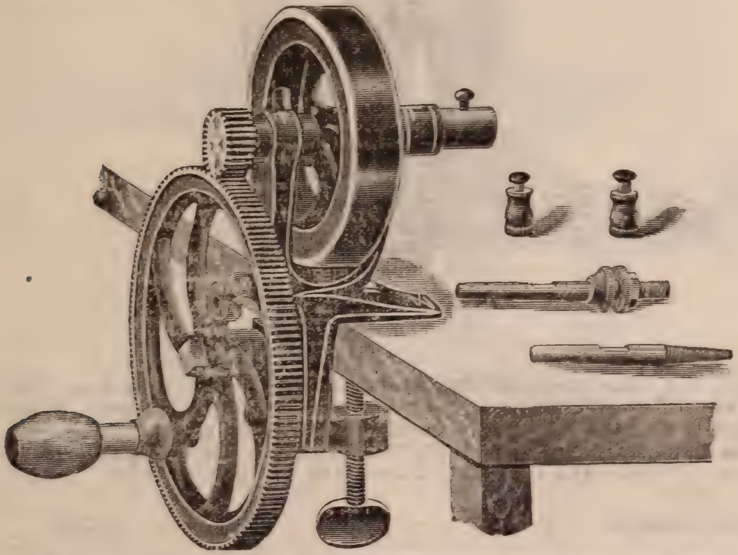
☞ All of the cog wheels of our Lathes are turned and cut on a machine, and are uniform, which makes them run true and with little noise.

SNOWDEN & COWMAN MF'G CO.,

No. 9 West Fayette St., Baltimore.

NEW HAND FLY WHEEL LATHE.

This Lathe is made larger and heavier and can be used with foot. It runs very steady and makes a good lathe for either Office Laboratory or to carry around. It is very neat.



PRICE, - - - - -	$5 00
" with Foot Attachment and Strap,	5 50.

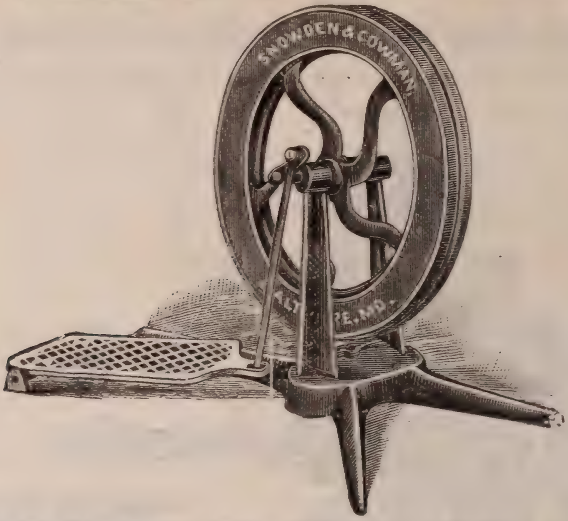
‘The proof of the pudding is in the eating."

If the experience of dentists generally did not prove OUR GOLD AND PLATINA ALLOY a superior filling they would not be willing to pay nearly double more for it than the price of common amalgams. I suppose there is not another alloy or amalgam so generally used by our better class of dentists.

Welch's Alloy, 1 oz. $3.00; 2 oz. $5.50, 4 oz. $10.00; 10 oz. $22.00.
Welch's Amalgam, 1 oz. $2.00; 2 oz. $3.50; 4 oz. $7.00; 10 oz. $15.00.
Welch's Oxiphosphate, large $1.50; medium $1.00.
Liquids or powders, large 75 cts.; medium 50 cts.

T. B. WELCH, - - - - Vineland, N. J.

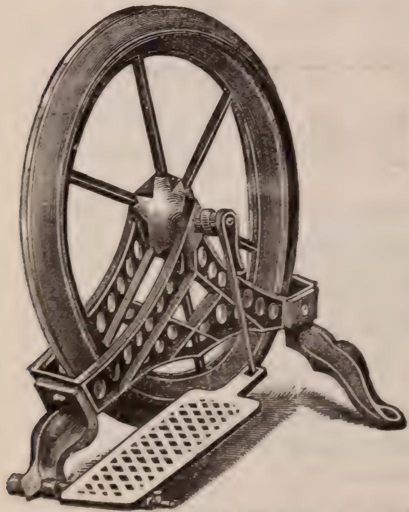
FLY WHEEL, No. 1, NEW.—Price Reduced.



This Fly Wheel weighs 30 lbs., with diameter of wheel 15 inches. The stand is the stiffest and steadiest of any driving wheel in the market. Owing to the position of the feet and the peculiar arrangement of the treadle, the wheel has an immense power and is very light running. In boxing remove pin that connects treadle with rod and fold treadle by side of the wheel. Weight complete, 46 lbs.

Price Boxed, - - - - - - **$7.00**

DIAMOND FLY WHEEL.—Price Reduced.



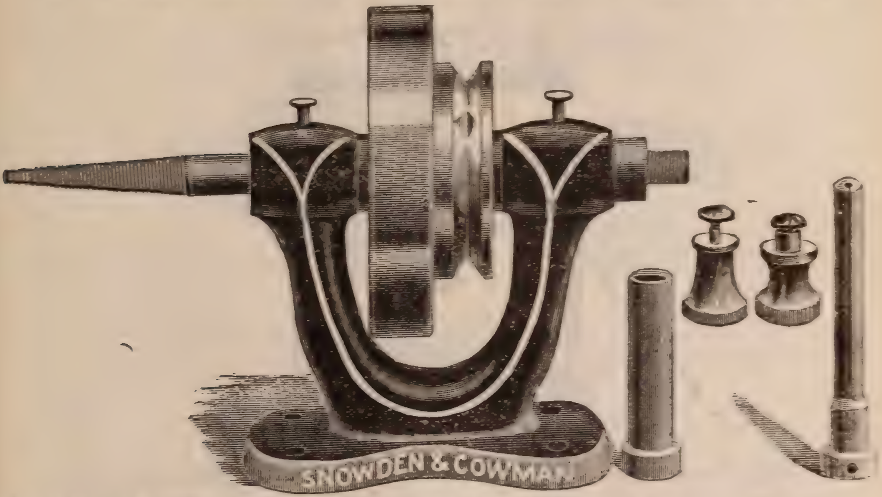
This fly-wheel is eighteen inches in diameter, with wrought iron spokes, in an iron frame, complete in itself, can be set any where, and runs very steady.

It has sufficient power and speed for any Dentist's Lathe Head. The feet are easily detatched, and all can be packed in a smaller box than any other Fly Wheel of its dimensions in the market.

Price Boxed, - - **$7.00.**

SNOWDEN & COWMAN MFG. CO.,
No. 9 W. Fayette Street,
Baltimore.

OUR NEW LATHE HEAD.

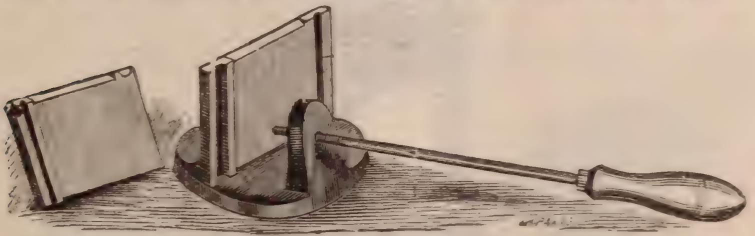


VERY SIMPLE AND EASY RUNNING.
ADJUSTMENT QUICKLY MADE.
VERY DURABLE AND STEADY.

PRICE WITH 4 CHUCKS, - - - $5.00.

SNOWDEN & COWMAN MFG. CO.'S

INGOT MOULDS.



No. 1, will cast a plate from one half of an inch to two inches in width, also a round, half-round and square bar. - $2.25

No. 2, will cast a plate from one half of an inch to two and three quarter inches in width, also a round, half-round and square bar. - - - - - - $2.75

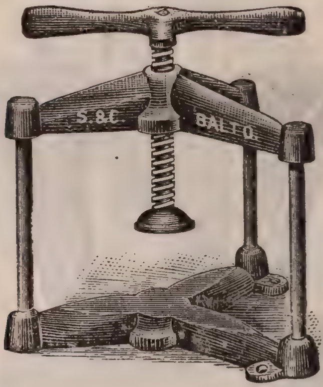
No. 3, will cast a plate 3 inches wide and 4 inches long also round, half-round and square bar, - $3.25

LIBERAL DISCOUNT TO THE TRADE.

Snowden & Cowman Mfg. Co's

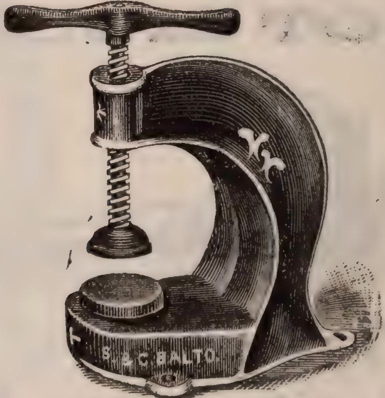
Flask Presses.

No. 1, Old Style Improved.



This Press is intended to close the flask after packing with rubber. It is of great advantage, saving screws and flasks. The upright rods are of wrought iron and the handle of the screw can be detached. They are *well made* and *very strong*, and has been made larger, so that it will take any Flask in the market. Price, - - - - $1.50.

No. 2, New Style.

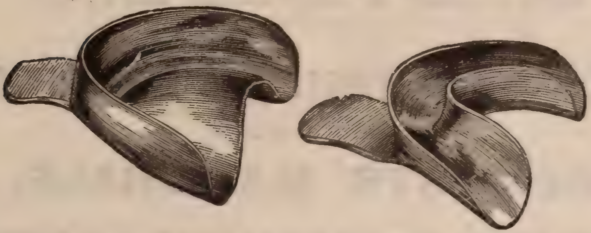


This Press is made of cast iron, very heavy, with steel screw and detachable handle. It has a Pivot Plate to level up the flask, insuring always a central pressure on the flask ; will take any flask in the market. Price - - $1.50

BRITANNIA IMPRESSION CUPS

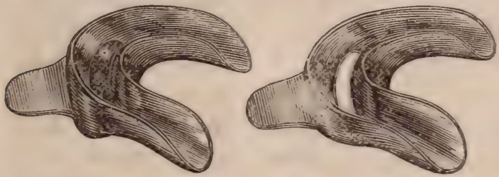
LONG HANDLES.

We Manufacture the following Sizes and Varieties:



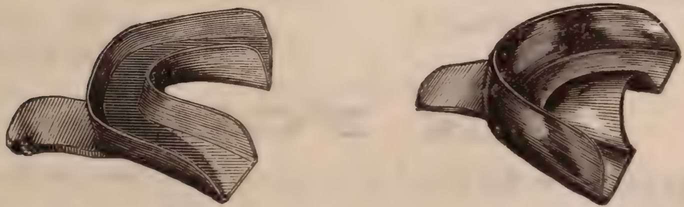
UPPER, Nos. 00, 0, 1, 2, 3, 4, 5, 6, 7.—(No. 00 is the largest size.)
LOWER, " 1, 2, 3, 4, 5. —(No 1 is the largest size.)

PARTIAL LOWER CUPS.



ENCLOSED CAVITY, Nos. 9, 10, 11.—(No. 9 is the larges size.)
OPEN CAVITY, Nos. 6, 7, 8. —(No. 6 is the largest size.)

UPPER AND LOWER CUPS.



PARTIAL UPPER—Flat Bottom, Nos. 8, 9, 10, 11—(No. 8 is the largest.)
FULL LOWER— " " " 12, 13, 14—(No. 12 is the largest.
PRICE............................Each...................25cts

SNOWDEN & COWMAN MFG. CO.
9 West Fayette Street, Baltimore Md

Dental Depot,

ESTABLISHED 1856.

SNOWDEN & COWMAN MFG. CO.

MANUFACTURERS OF

Lathes, Head Rests, Vulcanizers, Impression Cups, &c.

AND DEALERS IN

DENTISTS' MATERIALS,

No. 9 W. Fayette St., between Charles & Liberty Sts

BALTIMORE.

GOLD FOIL.

	Per 2 oz.	oz.	½ oz.	¼ oz.	⅛ oz.
Abbey & Sons,		$32.00	$16.00	$8.00	$4.
Valleau's		30.00	15.00	7.50	4.
Ney & Co's.		29.00	15.00	7.50	4.
S. S. White's, ¼ Century,	$58.00	30.00	15.00	8.00	4.
" " Globe,	58.00	30.00	15.00	8.00	4.
" " 1000 Fine,	58.00	30.00	15.00	8.00	4.
R. S. Williams, Cylinders, A, " " " B, " " Rect. Pellets, " " Standard,		30.00	15.00	8.00	4.00
Watt's Crystal,		32.00	16.00	8.00	4.00
E. Rowan & Co.		29.00	15.00	3.20 per 1-10 oz.	
" untrimmed,				5.60 per 1-5 oz.	
"				2.90 per 1-10 oz.	

TIN FOIL.

Ney & Co's—Nos. 4, 6, 8, and 10, - -	40 Cents per Book
S. S. White's, - - - - - - -	30 " " "
Nos. 4, 6, 8 & 10, (extra tough)	40 " " "

SNOWDEN & COWMAN MFG. CO.,

No. 9 West Fayette Street Baltimore

PORCELAIN TEETH.

GREATLY REDUCED.

We keep on hand a large assortment of Teeth of the following Manufacturers, which we

SELL AT THEIR REDUCED PRICES.

The S. S. White Dental Manf. Co.'s

	Each.	$10 lots.	$25 lots.	$50 lots.	$100 lots.	$300 lots.
Plain Rubber & Plate Teeth	.12	.11½	.11	.10	.09	.08
Gum Sectional Rubber, Plain Plate, long Pins, Single Gum Rubber and Gum Plate Teeth,	.12½	.12	.11½	.11	.10	.09

H. D. JUSTI & SON'S.

	Each.	$10 lots.	$25 lots.	$50 lots.	$100 lots.	$300 lots.
Plain Rubber and Plate,	12.	.11½	.11	.10	.09	.08
Gum Sectional Rubber, Plain Plate, Single Gum Rubber and Gum Plate,	.12½	.12	.11½	.11	.10	.09

Sibley's or Wilmington Co.'s Gum or Plain Teeth.

Per Set 14 Gum or Plain,	$ 1 00
11 Sets, " " "	10 00
29 " " " "	25 00
60 " " " "	50 00
125 " " " "	100 00

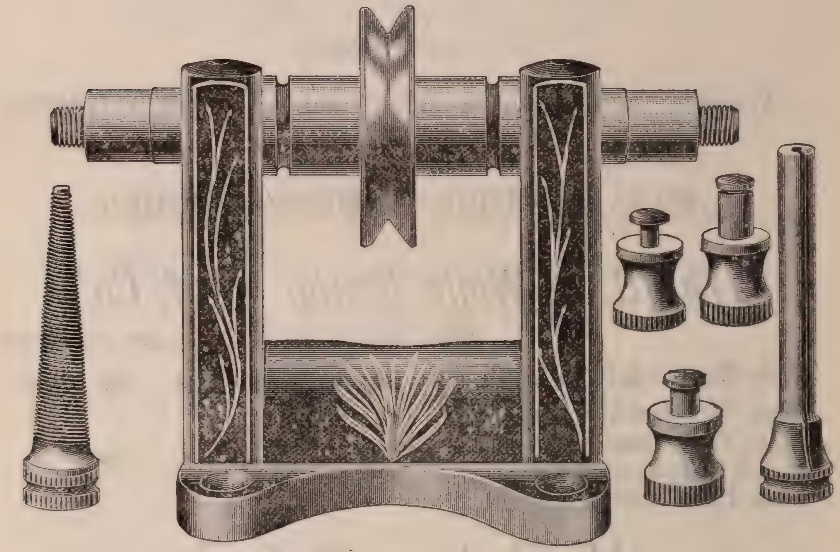
Less than Set of Fourteen Eight Cents per Tooth.

SNOWDEN & COWMAN MFG. CO.

DENTAL DEPOT

No. 9 W. Fayette Street.

NEW MODEL LATHE HEAD.



THIS ILLUSTRATION REPRESENTS ABOUT ONE-HALF SIZE OF
THE HEAD. IT RUNS VERY SMOOTH AND LIGHT
AND IS VERY SIMPLE. IT CAN BE RUN
BY ANY DRIVING WHEEL.

Price with Five Chucks, as Represented, - $4.75.

SNOWDEN & COWMAN MFG. CO.,

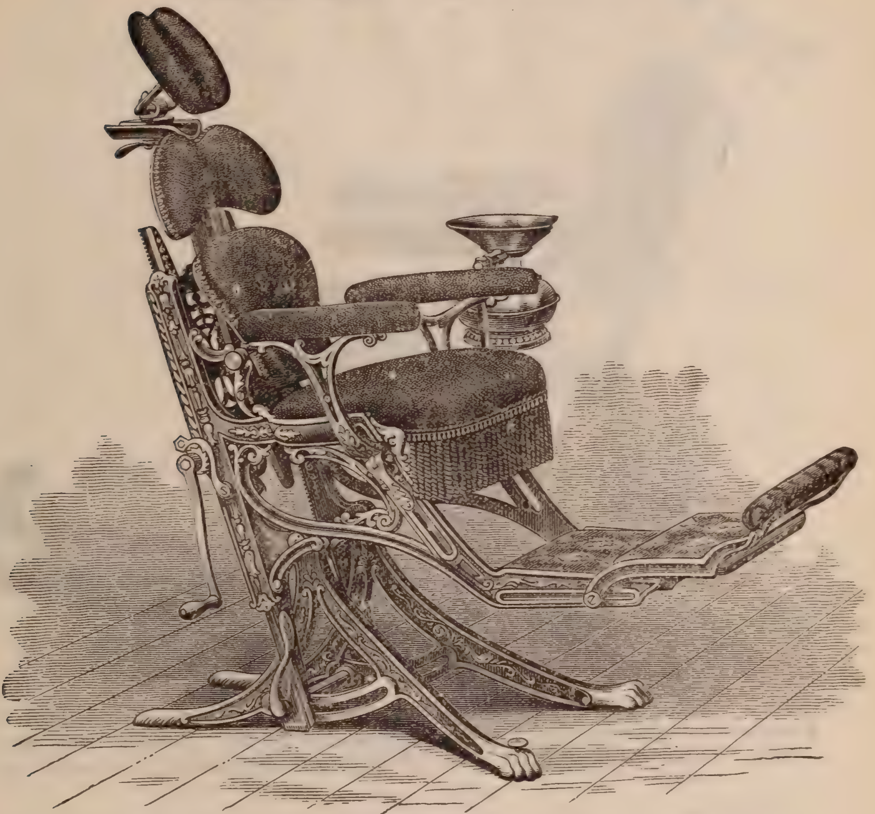
DENTAL DEPOT,

9 West Fayette Street,

TRADE SUPPLIED. BALTIMORE, MD.

THE MORRISON DENTAL CHAIR.

Reissue May 15, 1877. English Patent Dec



PRICES.

In best quality Green or Garnet Plush or Plain Morocco . .	$100.00
In Real Morocco, Embossed	110.00
In finest quality Green or Garnet Plush, puffed and trimmed with Silk Plush, full Turkish Upholstery	120.00

The Illustration shows No. 4 Spittoon, No. 3 Bracket, No. 3 Socket, which are extra and add $8.00 to above price.

BOXING FREE.

STUDENT'S MORRISON CHAIR.

To meet an often-expressed want of a first-class chair at a low price, the Student's Morrison was brought out. It is, in all respects, equal to the regular Morrison chair, except that it is upholstered in a seal-brown corded material, instead of a plush. It presents a very neat appearance, and will wear nearly as well as plush.

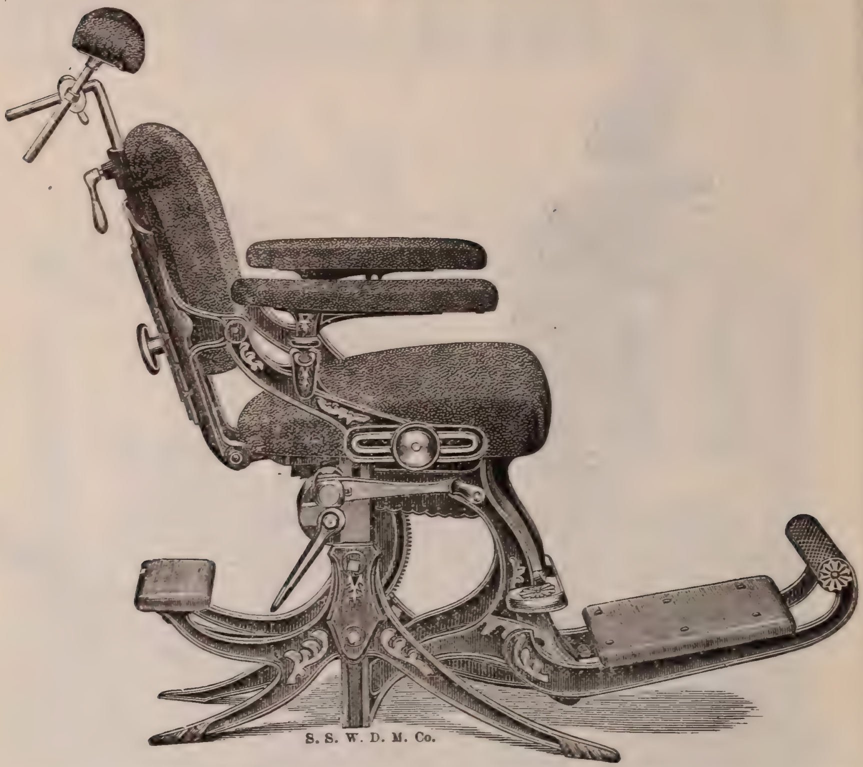
PRICE.

In Corded Upholstery.	$ 85.00

We supply either style of the Morrison Chair, with or without Casters When ordered with Casters, the price is $10.00 extra.

For Sale by Snowden & Cowman Mfg. Co., 9 W. Fayette St., Baltimore.

THE CYCLOID CHAIR



Patented December 28, 1875; July 3, 1877; November 20, 1877; March 9, 1880; May 22 1883. Re-issues July 4, 1876; March 19, 1878; August 27, 1878. Others pending.

This Chair was designed especially to meet a demand for a chair which, while affording a variety of essential movements, could be sold at a lower price than the Wilkerson, The S. S. White Pedal-lever, or the Morrison.

For those who want a low-priced chair which in facility of movements far surpasses anything heretofore offered for the money, the Cycloid is *the* chair. It is strongly built, and the finish and general appearance make it a desirable addition to a well-furnished office.

The lifting mechanism, which has a range of 10 inches, is entirely new and is worked with great ease and rapidity. Should the crank by accident slip from the hand the descend of the Chair is automatically arrested.

The arms are so arranged that they may be rotated out of the way of the operator and yet be of service to the patient.

The foot-board can be adjusted in four positions, and a permanent support for the foot of the operator is placed at the back of the base, the convenience of which will be obvious to those who are in the habit of using a "cricket."

Nearly all of the movements can be made with one hand while standing at the side of the Chair.

Price, upholstered in Corded Material, - -	$ 70.00
" " Best Quality Maroon or Green Plush,	85.00

For Sale by SNOWDEN & COWMAN MFG. CO.

Snowden & Cowman Mfg. Co.'s

DENTIST'S CASE BOOKS,

For Recording all Operations in Dentistry

WITH

TITLE PAGE, INDEX or ALPHABET, and the pages numbered, printed on fine paper with a DIAGRAM of the teeth at the top of each page, neatly and substantially bound in muslin.

PRICES.

One Quire Book,	$1 00
Two "	1 75
Three "	2 50
Four "	3 25

DENTISTS' BILL HEADS.

These Bill Heads are printed on fine paper with diagram of the teeth on each, in the following sizes :

No. 1.—Size, 8½ inches wide by 7 inches, Price per 100,	$ 30
No. 2.—Size, 4½ inches wide by 7 inches, "	40
No. 3.—Size, 8½ inches wide by 7 inches, "	40

JOB PRINTING.

Having fitted up a Printing Office in our establishment, we are prepared to fill at the very shortest possible notice, orders for various kinds of Printing, such as

CIRCULARS, BILL HEADS, NOTE HEADS,
STATEMENTS, HEADINGS, LABELS,
ENVELOPES, CARDS, &C.

☞Liberal Discount to the Trade.

PUBLISHERS OF

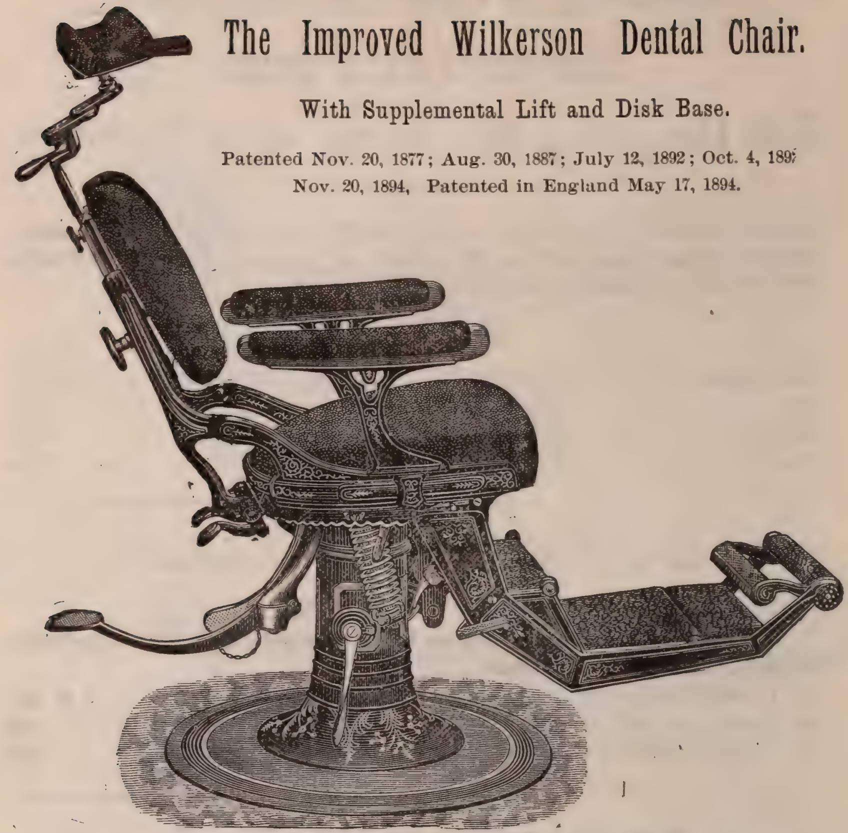
The American Journal of Dental Science,

$2.50 PER YEAR.

The Improved Wilkerson Dental Chair.

With Supplemental Lift and Disk Base.

Patented Nov. 20, 1877; Aug. 30, 1887; July 12, 1892; Oct. 4, 189
Nov. 20, 1894, Patented in England May 17, 1894.



LOWEST POSITION OF THE CHAIR.

Supplemental Lift for the Wilkerson Chair.

One of the most difficult problems in the production of a first-class dental chair has been to obtain the great range of vertical adjustment which is desirable to meet the needs of the dentist without incurring one or more objectionable complications, such as the cutting of the floor of the operating-room or the telescoping of the supports.

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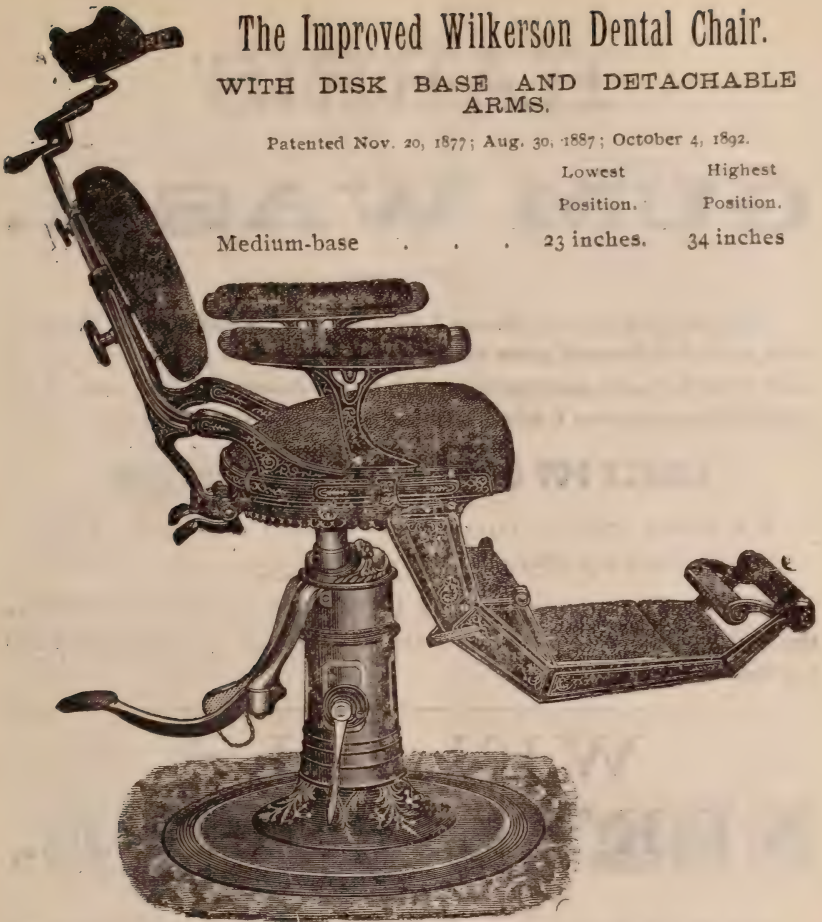

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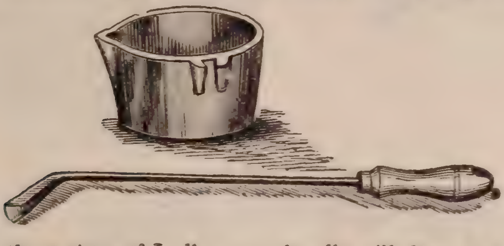

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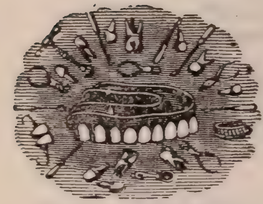
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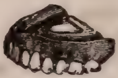
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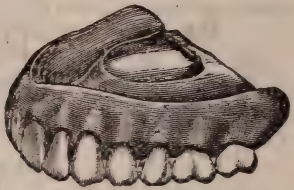
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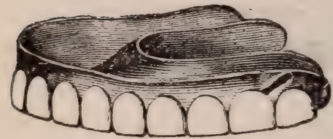
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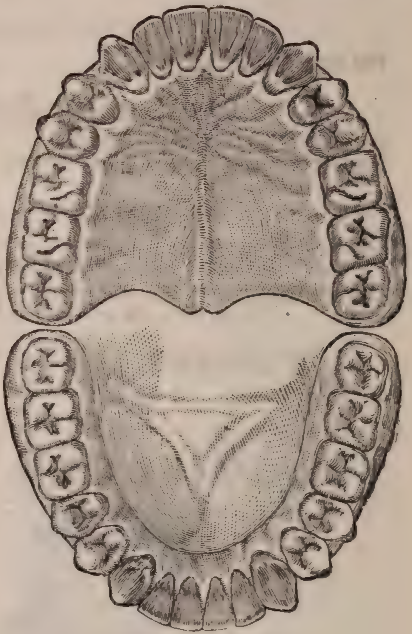
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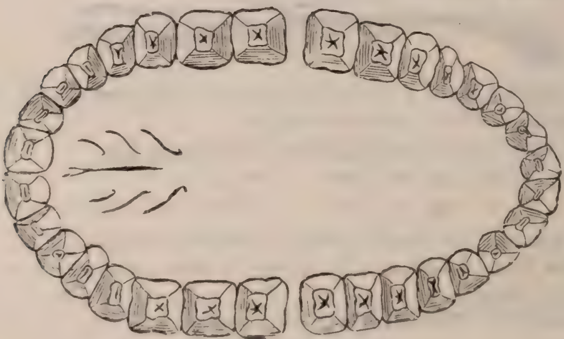
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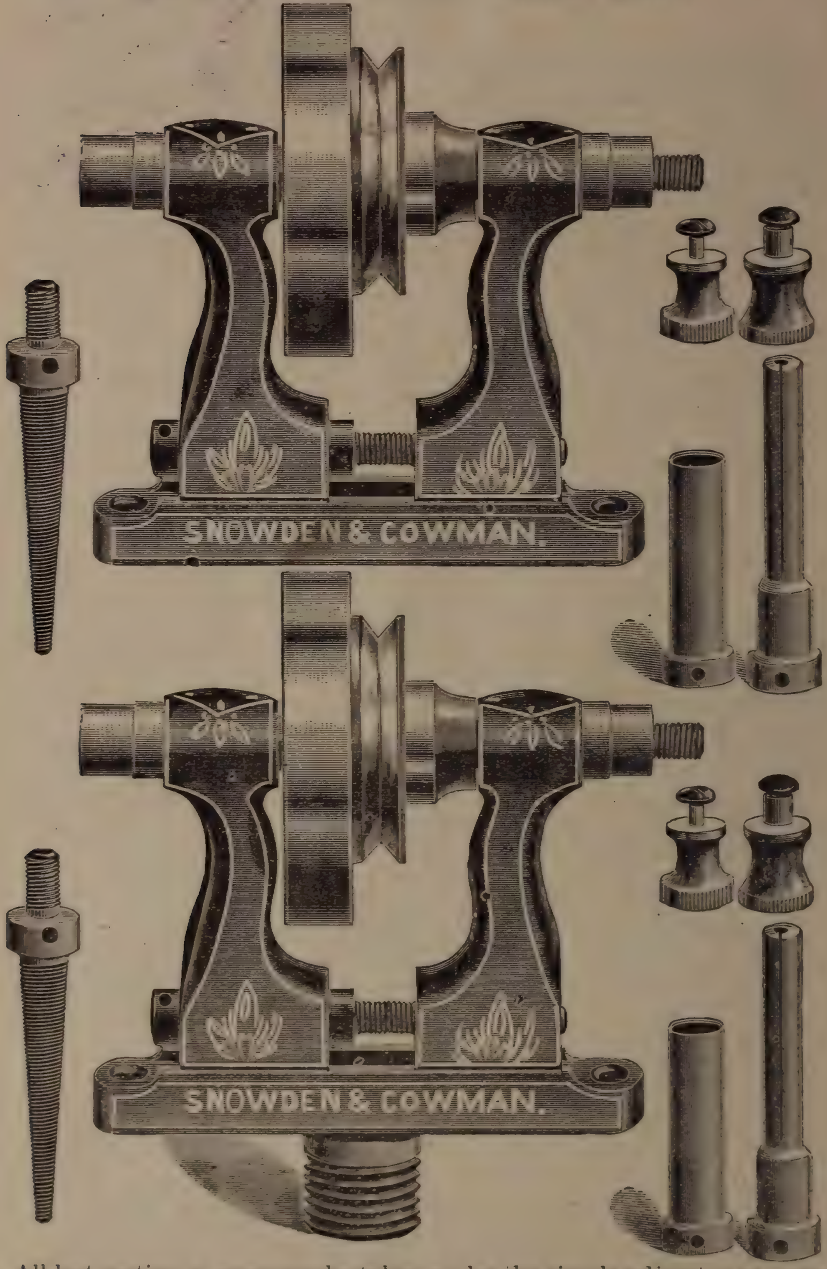
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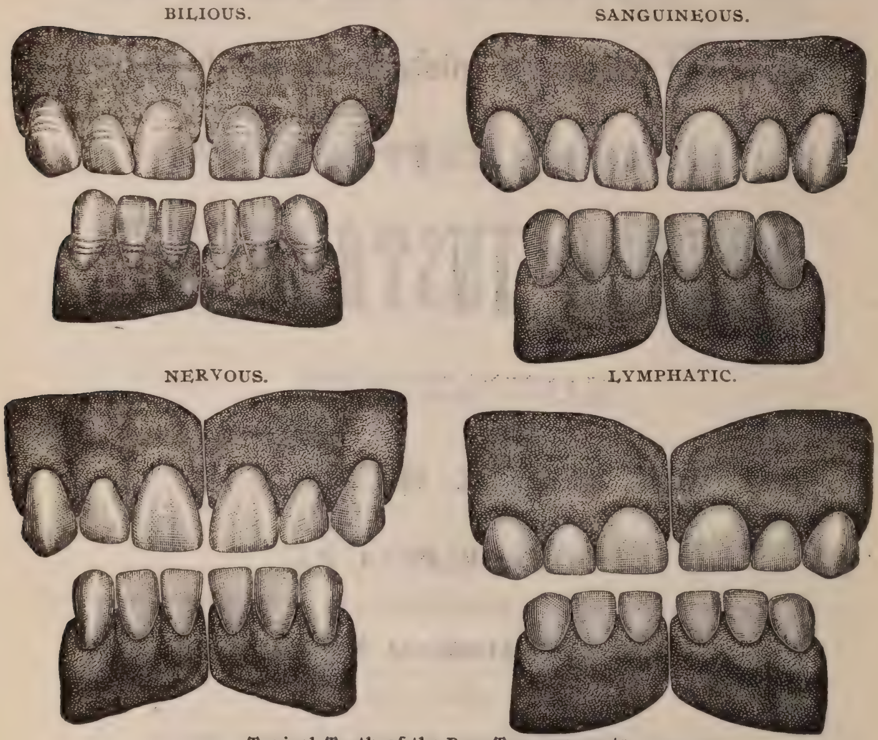
THE ORIGIN OF VARIETY.

Nature makes no two sets of human teeth exactly alike. The element of temperament enters into the construction of every human denture, as into every other portion of the body. No two persons are gifted with exactly the same temperamental modifications, and the teeth are at least as illustrative of these modifications, as any other feature. Hence we find the "infinite variety" of nature expressed in the differing forms and arrangement of the teeth as markedly as in the color of the hair or the shape of the nose. The teeth supplied by nature are the models upon which the prosthetic dentist must build in order to be absolutely successful; but there are conditions which he must take into consideration, to which nature needs to pay no attention, for they do not exist at the time her work is done.



Typical Teeth of the Pure Temperaments.

THE TEMPERAMENTS.

The representations of the typical teeth of the four basal temperaments show that the differences between the pure types are marked, requiring but a glance to see. It may be said, however, that none of the temperaments is ever found absolutely pure,—without admixture with one or more of the others. The combinations are infinite in number, though the differences between two given examples are sometimes infinitesimal in degree. But there are differences which the prosthetic dentist must take account of: Thus, he must not use porcelain teeth with the bluish shade of the nervous temperament where the strong yellow of the bilious is required. Otherwise the incongruity will condemn him at once.

THE CUE TO THE DENTIST.

The wise dentist takes his cue from the facts we have set down: That no two sets of natural teeth are exactly alike; that the artificial set should correspond with the temperamental characteristics of the individual; and that the conditions in the mouth from which the teeth have been extracted are not the same as when those teeth were implanted there by Nature. Guided by these facts, also, our line of molds has been expanded until it now embraces more than 2100 distinct patterns; a number which, bearing in mind that the differences in nature's designs are frequently infinitesimal in degree, will enable the skillful prosthetic dentist to satisfactorily meet the requirements of every case presented.

THE FOUR CORNERS OF THE WORLD

can be supplied from our stock of Porcelain teeth. We have Teeth for every need of the prosthetic dentist, no matter where he is located; for every condition or variety of the human mouth. Nature makes no two sets alike. Our 2100 molds enable the dentist to counterfeit Nature successfully. At each of our Houses is a line of Sample Teeth showing the product of every mold we use arranged for quick reference and easy inspection. It will be shown with pleasure, and as an object lesson is well worth looking at.

FACTS TO KEEP IN MIND.

Not only in the number of molds is our stock superior to any other. In shades, in strength, in adaptability,—in the combination of the qualities essential to Porcelain Teeth, they are unequaled. In using them there is a saving of time, of labor; there is less liability to breakage in mounting; they are therefore more economical for the dentist than any others. They give better satisfaction to the wearer.

AT EVERY MAN'S SERVICE.

We place all these advantages at every dentist's service. At each of our houses is a corps of men trained to select teeth for the cases of out-of-town patrons. They have the advantage of our stocks to draw upon, and their experience enables them to select as wisely as the average dentist could. The model, with clear directions, is all they require. They select satisfactorily, every day, for hundreds. Why not for you?

Our Catalogue of Porcelain Teeth (200 large octavo pages) free on request. This Catalogue with our Shade Sample Guide will enable you to order by mail and be served as satisfactorily as if you were present in person.

THE S. S. WHITE DENTAL MFG. CO.,

Philadelphia, New York, Boston, Chicago, Brooklyn,
Atlanta, Rochester, Berlin (Ger.), Beunos Aires (R. A).

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Relating to the Entire Curriculum of the Dental Student.

Part I.	**Pertaining to the Freshman Course,**	**$2.00.**
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By FERDINAND J. S. GORGAS, A. M., M. D., D. D. S.

This work consists of questions and answers on Anatomy, Physiology, Dental Histology, Materia Medica and Therapeutics, Chemistry, Oral Surgery, Dental Pathology, Operative Dentistry, Prosthetic Dentistry, Metallurgy, Plastic and Metal Work, Porcelain-crown, Cap-crown Bridge-work, and Atmospheric Pressure, Deformities of Palates, etc., etc.

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Your books ot Questions and Answers for Dental Students received. I have looked over the parts connected with my College Department—Operative Dentistry, and Dental Physiology and like them much. I trust the series will meet with much favor, as of it they are worthy." C. N. PIERCE, Dean and Prof. of Dental Physiology, Dental Pathology, and Operative Dentistry, Pennsylvania College of Dental Surgery.

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continue to challenge the attention of the Dental Profession!

Astonishing claims are made by some manufacturers concerning their product in porcelain teeth. If we, for one moment, believed that said claims would be literally accepted by any large number of intelligent practitioners, it would be a matter for our consideration.

The sterling fact remains, however, that no **thinking** practitioner is influenced one iota by such fanciful claims.

Twenty-eight years of experience in the manufacture of Porcelain Teeth, and our very satisfactory trade relations with the Profession **to-day,** stands for much to our credit.

We have confidence enough in the Dental profession of the world, **to believe they will, with absolute certainty, treat us fairly**—those who are not using our teeth—by giving them a trial.

This done we ask no more. Once you have used them, you will continue to do so. All high sounding claims of competitors, and that unreasoning fallacy that in a few minds exists, that the higher price implies the better quality, **will all be utterly swept away** when the dentist tries our teeth, and **compares and observes results.**

Your dealer can supply our teeth doubtless; if not, do not accept any others, but send direct to us. We guarantee expert and prompt attention to all orders.

GUM AND PLAIN RUBBER TEETH, OR SHORT PIN PLATE TEETH

Per Set of 14 Teeth, $1.00

Less than 14 Teeth	11 Sets	29 Sets	60 Sets	125 Sets
8 cts. each	$10.00	$25.00	$50.00	$100.00

FLAT BACK AND ALL LONG PIN TEETH.

Each	$10.00 Lots	$25.00 Lots	$50.00 Lots	$100.00 Lots
10½ cts.	10 cts.	9½ cts	9 cts.	8 cts.

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Sibley's Felt Gold

...The Great Time Saver...

Requiring only about half the time to perfectly complete a filling that is necessary with other forms of gold, and it is **stronger, tougher** and more **dense** when finished.

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Teeth so frail that you would not attempt to fill them with ordinary gold,—or if you did, would fail,—can be successfully filled with **felt gold.**

The extreme cohesiveness and quality of most readily adapting itself to the walls of the cavity, with the least possible discomfort in manipulating, to patient and operator, is appreciated by both.

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Time is money; therefore, why not save it by using Felt Gold? It results in more satisfaction, and twice the amount of work in a given time, and that too with work of a character in which both your patient and operator will have pride.

So convenient in form is this gold, that **every particle can be used**, and, there being no disposition to ball up, you have **no waste.**

Give it a trial.

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Sibley's Felt Gold, Sample Package, 1-40 oz. packages,	$ 1.00
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Full directions accompany each package.

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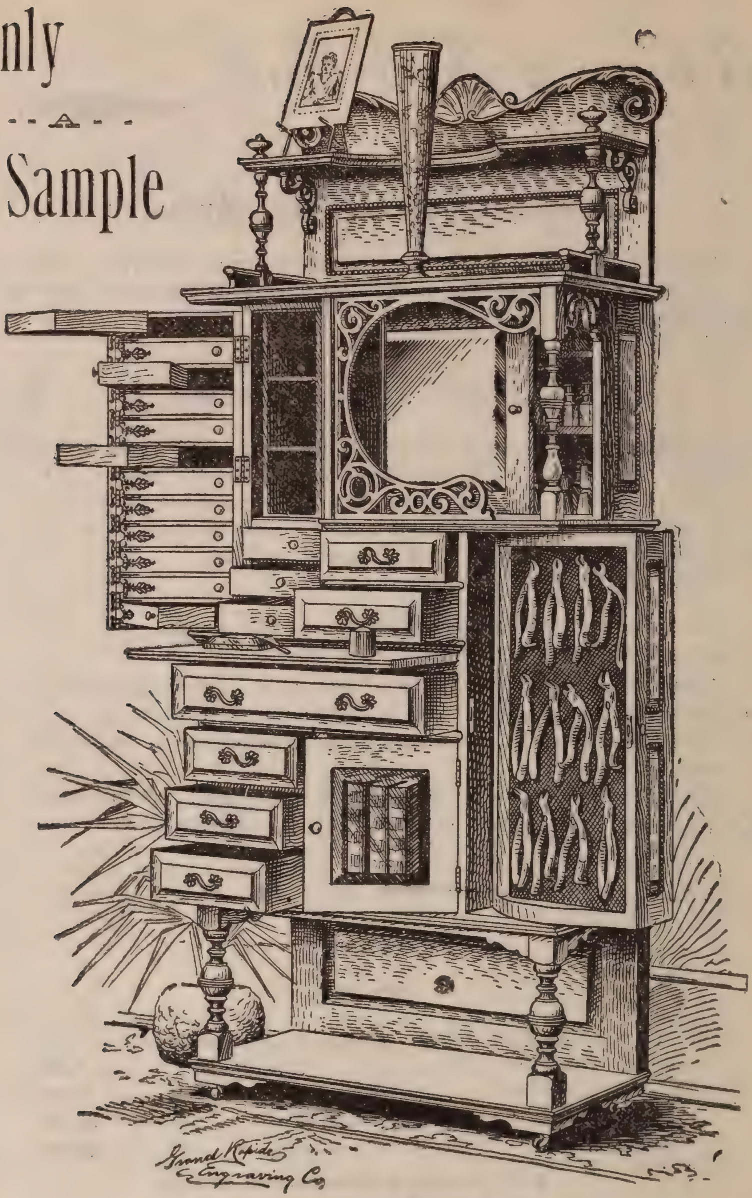

No. 75 Cabinet Patented Dec 4th, 1894.

of our line of Dental Cabinets, but its our best seller. Quartered Oak, lined with Mahogany, bright gilt trimmings, beautiful when closed, convenient when open. **$75.00.**

Our cabinet circular will show you many styles, and its had for the asking.

The Ransom & Randolph Co.,
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DIRECTIONS FOR USE OF

BLAIR'S VAPORIZER

FOR THE TREATMENT OF PULPLESS TEETH.

1. If possible, always adjust rubber dam, or usual method of keeping tooth dry. Never use a broach or drill in canal until treated with vaporizer.

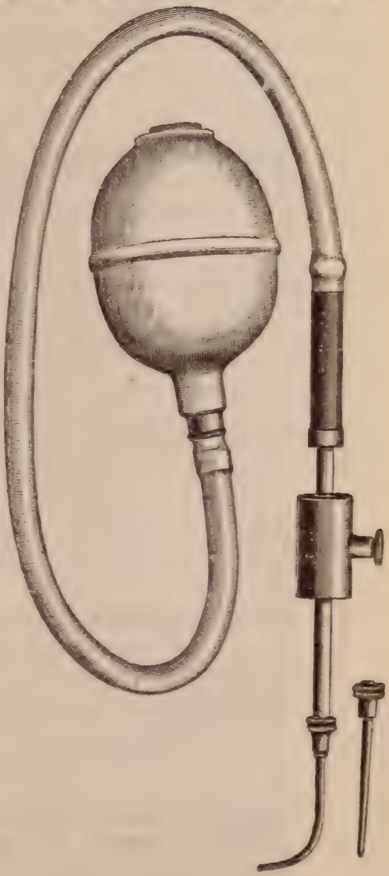
2. Clean out pulp chamber and expose openings of nerve canals; then introduce one of the points in opening of canal, and force the gas generated in the vaporizer into the canal until the root is saturated with the gas. Clean out canals thoroughly when possible, then treat again and fill immediately, if there is no indication of pus coming through the end of roots.

3. If there is a blind abscess in the tooth, stop up lightly with cotton and have patient return on third day. Three treatments will generally cure any case of blind abscess.

4. If there is a fistulous opening, try and force gas through same. One application is often all the case will require.

Open screw top on vaporizer and place small quantity of the iodoform (which accompanies each instrument) in chamber; then heat sufficiently, not too hot, to cause a thin stream of vapor to issue, on pressure of bulb, from point of vaporizer needle. Then insert in canal and force gas into same.

This gas will penetrate to every point in the canal and will absolutely destroy every vestige of animal life.



PRICE, EACH, $3.50.

MORRISON BROS., Sole Agents,

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Artificial : : : :
. . . . . TEETH.

TO THOSE dentists who have for many years used and approved the teeth bearing the stamp of H. D. Justi, it might seem unnecessary to further advertise them, but for the information of the great number of young men who are annually entering the ranks of the Dental Profession, we wish to call attention to a few points in which we claim superiority for these teeth over all others :

IN FORM these will excel both in variety and in close imitation of nature, not only in her ordinary average styles, but also in what might be called her eccentricities of form and arrangement.

IN COLOR we have succeeded in most nearly securing that bony texture which is so distinct from the porcelain-glitter we see in so many artificial teeth, and in the delicate blending of the shade they are eminently satisfactory.

IN STRENGTH they have the highest degree possible consistent with maintaining the other qualities required. It would be quite possible to make teeth much stronger by disregarding beauty of form, and making a coarse, thick block, but this ought to be, and doubtless would be, at once rejected by both dentist and patient.

IN ADAPTATION to the alveolar ridge, great care has been taken to meet every requirement, and finally we ask for the product of our factory only a careful criticism and fair trial to convince the profession that we are fully justified in the superiority we claim for it.

H. D. Justi & Son,

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MADE IN U. S. A.

H. D. JUSTI & SON'S SAMPLE SHADE HOLDER.

Patent Nov. 10th, 1896. Patent Applied For.

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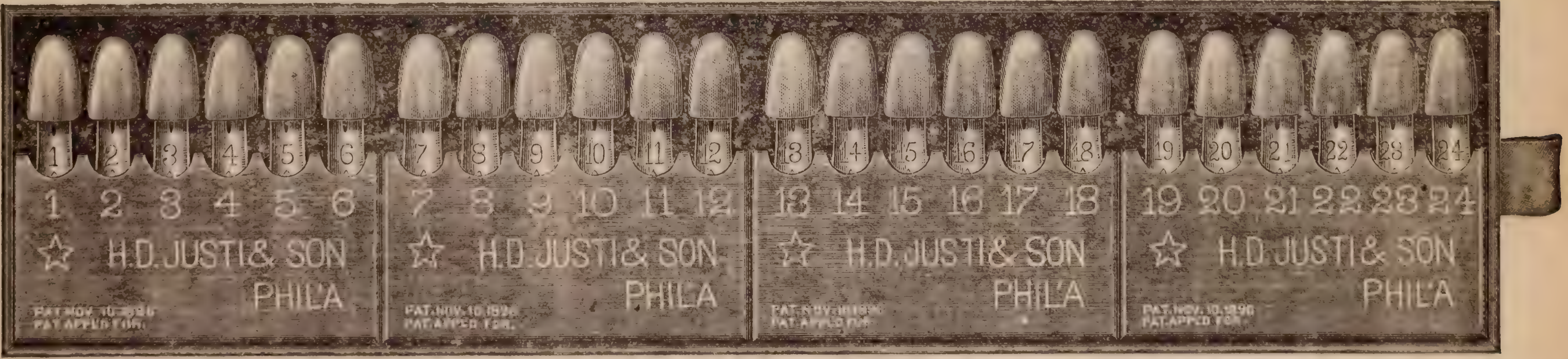
The **originality** of our Porcelain Teeth in regards to **shape, strength** and **natural blending of colors** is too well known throughout the world to need any further comment.

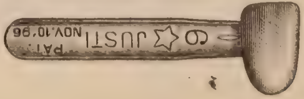
This holder is made in four sections and each tooth can be separately withdrawn and used in desired positions. A convenience which heretofore has never been offered to the profession.

Our assortment of shades is endless from light to dark in all shadings. From experience in selecting shades we think these twenty-four shades will meet nearly all requirements, but intermediate shades will be furnished when desired.

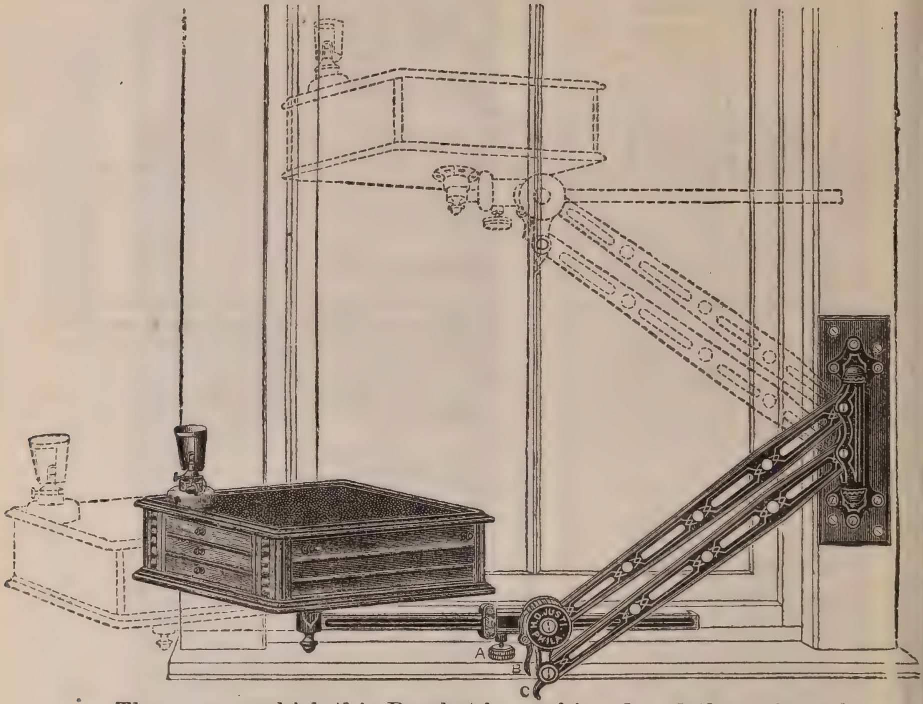
PRICE, $1.75.



For Sale by all Dental Depots.



The HANDY BRACKET.



The success which this Bracket has achieved and the universal popularity and demand for it, has far exceeded our highest expectations; having made a number of improvements since its original introduction, we considered it essential to give a new illustration of it as it is now made, accompanied by the Grigg Table.

The Bracket being so well known and fully described before we deem it unnecessary to repeat, but wish only to add, that when we stated this Bracket to be one of the most convenient ever placed on the market, we were not wrong in our assertion, as its great sale has since demonstrated.

PRICES

Handy Bracket with Table No. 1, ...	$12,00
" " " " No. 2, Lamp and Shield, . .	14.00
" " " Grigg Table, " " "	24.00
" " " Allen " Plain Sides, Lamp and Shield,	18.00
" " " " " Glass " " " " .	21.00
Small Table No. 1, covered with Cloth or Leather, . . .	3.00
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Allen " Plain Sides " " " " " " "	9.00
" " Glass " " " " " " " "	12.00
Grigg " covered with Cloth or Leather, Lamp and Shield,	15.00

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HARRIS'
GUM WASH.

This very pleasant and efficient Lotion has been found highly beneficial when applied to diseased gums after removing the causes of irritation; and in cases where teeth are sensitive from cold or the receding of the gums. Also, applied after extraction it allays pain and irritation.

NEATLY PUT UP IN THREE OUNCE BOTTLES.

3 oz. Bottles, each,	$ .25
3 oz. Bottles, per dozen,	2.75

Made from Formulae prepared by Dr. Chapin A. Harris and has been on the market for the past thirty-two years and endorsed by every dentist who has used it.

WELCH'S
NERVE PASTE.

This preparation is very certain in its action on the nerve, destroying it in less than twenty-four hours. It has the advantage of not causing pain or producing inflammation, with very rare exception. Also, it may be used with safety in cases of toothache that proceed from exposed nerve, and seldom fails to give relief in from five to twenty minutes.

Directions.—Place a portion, of the size of a pin's head, in *immediate contact* with the exposed nerves, covering it carefully with wax, allowing it to remain twenty-four hours. A very minute portion placed in a cavity, in preparation for filling, will destroy its sensibility in four to six hours. The bottle contains sufficient for two hundred applications.

N. B.—If the paste should become dry, moisten it with creosote, or warm it until it is quite soft.

☞ If, after twenty-five applications, it does not give satisfaction, return the Nerve Paste and we will return the price.

For Sale by SNOWDEN & COWMAN MFG. CO.,
9 West Fayette Street.

Hawe's Moulding Flasks.

Fig. 1.

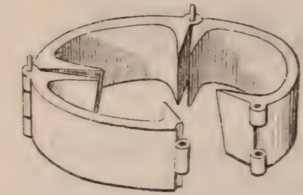


Fig. 2.

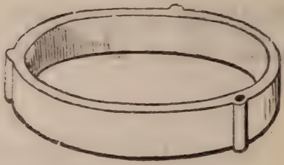


Fig 3.

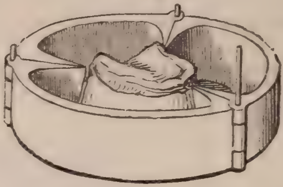
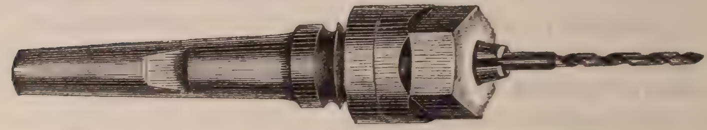


Fig. 1 represents the lower section of the Flask, slightly opened, to show the Joints. Fig. 2 is the upper section. When ready for use, the lower section is closed and confined by a Pin, and the Plaster Model placed in it, as represented in Fig, 3.

Price . - - . - - - . $3.00

STEEL CHUCK.

PATENTED.



The above cut represents a very complete SELF-CENTRING, THREE-JAWED STEEL CHUCK, carefully made, durable and convenient. The wearing parts are hardened ; the jaws have a good bearing on the drill, and hold securely either a straight or tapered shank.

It carries Drills, Burs, or Corundum Points of the Dental Engine, one-eighth of an inch in diameter, and under, and made to fit our Amateur, United States Short Spindle American Short Spindle, and Hand and Foot Lathes.

Price, with Wrench, - - - $2.00.

REDUCED PRICES

OF

Dental Machinery of Our Own Design.

Amateur Lathe—Complete,	$25 00
“ “ Head, &c. all above stand,	13 00
“ “ Stand and Cord,	13 00
United States Lathe—Long Spindle,	15 00
“ “ “ Short Spindle,	15 00
“ “ “ Stand and Cord,	11 00
American Lathe,	14 00
“ “ Extra Large Driving-Wheel,	15 00
Diamond Lathe—Complete,	13 00
“ “ Fly Wheel,	7 00
Fly-Wheel No. 1,	7 00
Portable Hand or Foot Lathe—Complete,	5 50
“ “ “ “ Without Foot Attachment,	5 00
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Hand Fly-Wheel Lathe,	4 50
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Diamomd Lathe Head—Polished Brass,	6 00
Socket Table Head,	4 50
U. S. Table Head—Holes in base to screw to table,	4 00
Engine Lathe Head—Nickel Plated,	4 00
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Extension Brackets—Weight only five pounds,	6 00
Patent Portable Head-Rest—Nickel Plated,	10 00
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Flask Presses—Well made and very strong—No. 1 Old Style,	1 50
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Ingot Moulds—Broad base with handles, No. 1,	2 25
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Bailey's Moulding Flasks—Per set of 2,	75
Steel Chuck,—to fit our Amateur United States, American, Short Spindle and Hand and Foot Lathe,	2 00
Welch's Nerve Paste,	1 00
Britannia Impression Cups—long handles, various styles and 29 sizes—each,	25

☞ We make no charge for Boxing any of the above goods.

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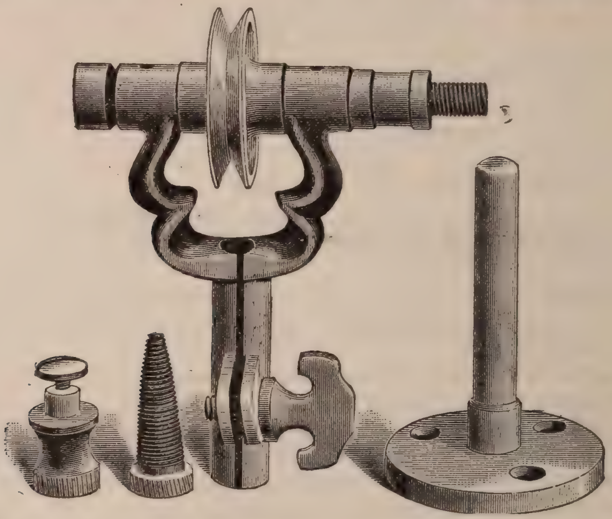
ENGINE LATHE HEAD FOR BRIDGE AND CROWN WORKERS.



THIS LATHE HEAD CAN BE ATTACHED TO SHAW ENGINE BY SLIPPING SOCKET OVER STANDARD AND TIGHTENING THUMB SCREW. IT IS VERY LIGHT AND NEATLY NICKEL PLATED. IT RUNS VERY SMOOTHLY AND LIGHTLY. IT ALSO CAN BE MOUNTED ON TABLE AS SHOWN IN CUT BY THE SMALL ATTACHMENT. . . . .

PRICE COMPLETE . . $4.00.

VULCANIZERS

Our Own Manufacture.

WE ARE MAKING 3 STYLES.

Complete with Coolidge's Gas and Time Regulator, . .	$25 00
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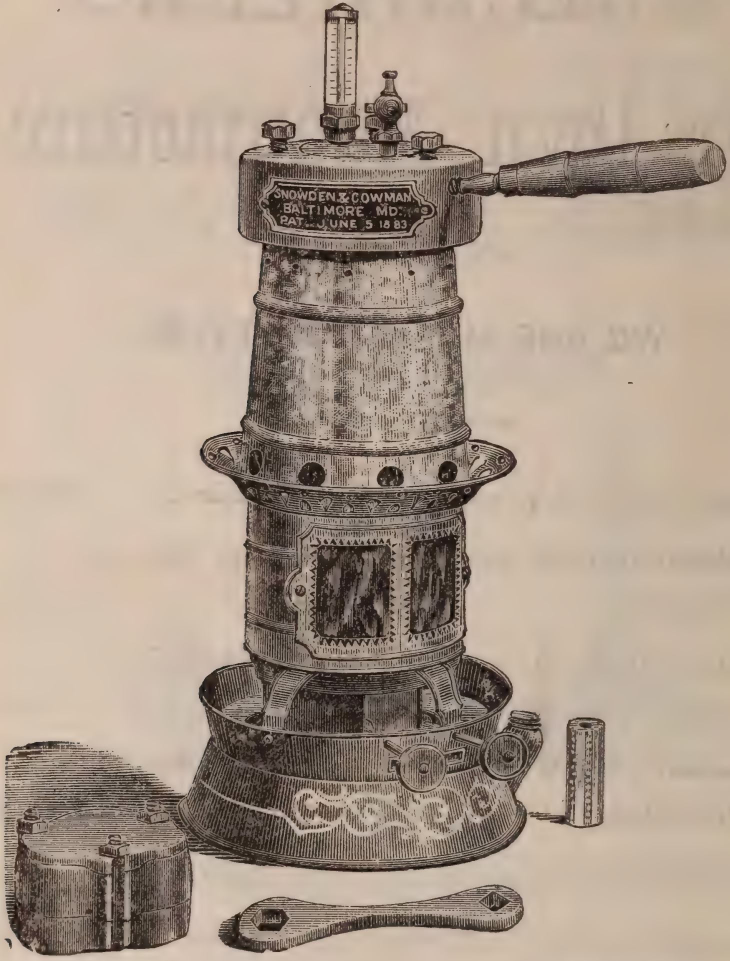
Complete with Thermometer and Blow-off Cock for Kerosene or Gas, ...	18 00
Vulcanizers complete with Two Brass Flasks, instead of Iron Flasks, adds	1 50
Vulcanizers complete without Two Iron Flasks, deduct	1 50
Vulcanizers complete, less Kerosene Stove, deduct . .	1 70
Vulcanizers complete, less Gas Stove, deduct	1 00
Large Iron Flasks, each	1 00
Large Brass Flasks, each	1 50

SNOWDEN & COWMAN MFG. CO.

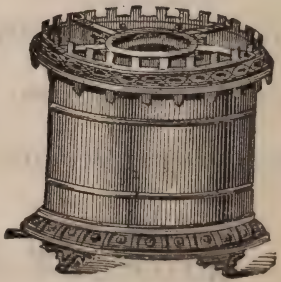
9 W. Fayette Street, Baltimore, Md.

SNOWDEN & COWMAN MFG. CO.'S

New Patent Vulcanizer.



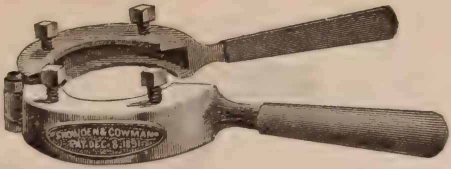
Complete for Kerosene or Gas, with Two Large Malleable Iron Flasks, ***$18.00***

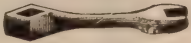


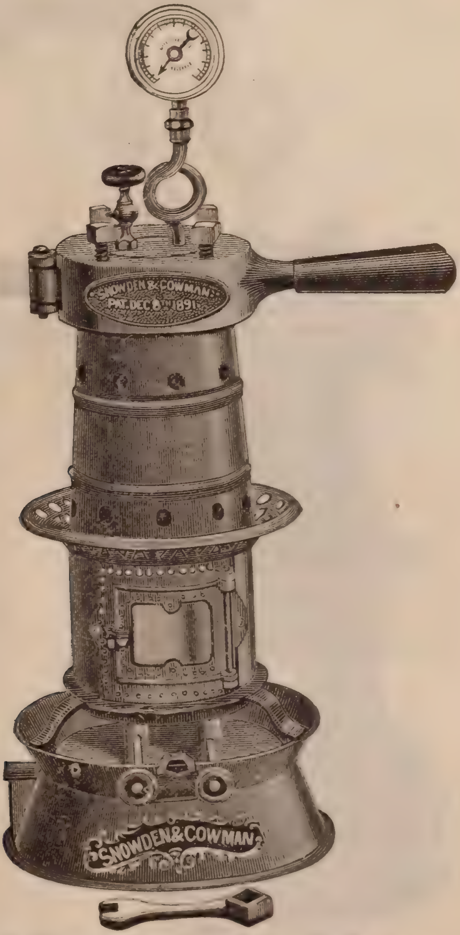
Gas Stove.

PATENTED DEC. 8, 1891.

Snowden & Cowman Mfg. Co.'s Hinged Clamp Vulcanizer.



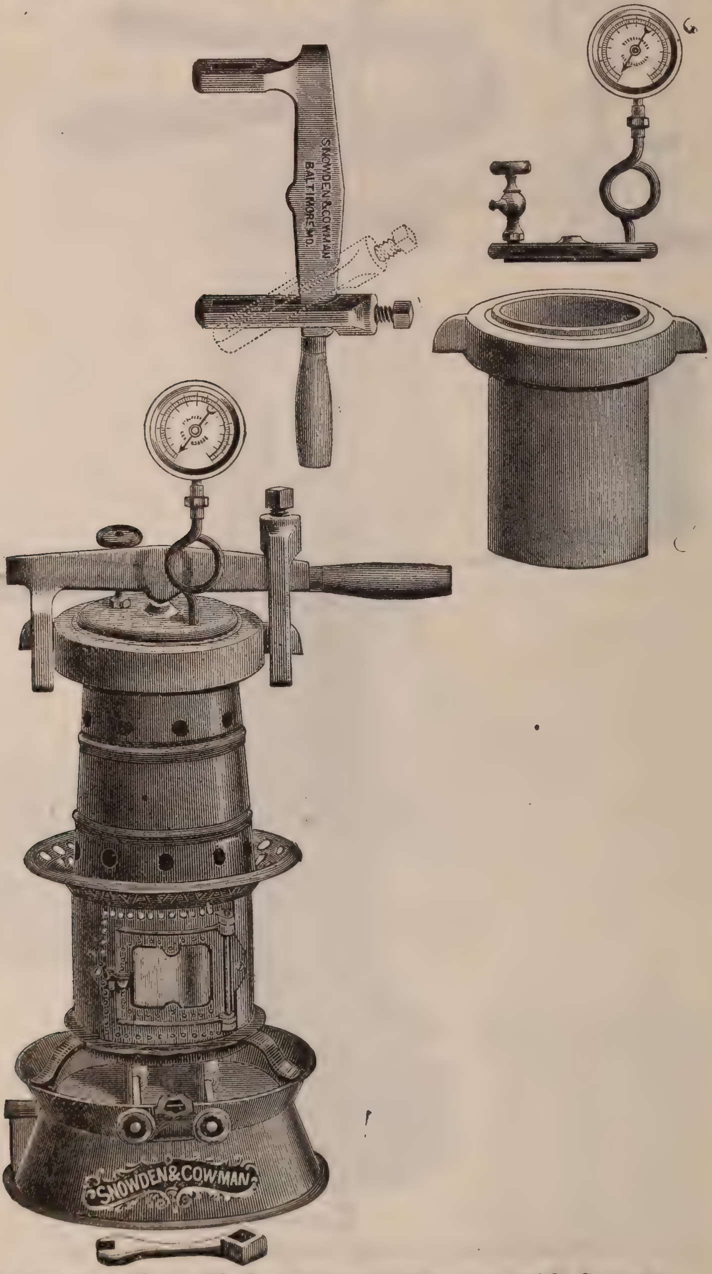




Price complete with 2 Flasks Improved for Gas or
Kerosene with Guage as represented,...................... $21,00
With Thermometer and without Guage,.......... 18.00

CIRCULARS ON APPLICATION.

Snowden & Cowman Mfg. Co.'s Improved Cross-Bar Vulcanizer.



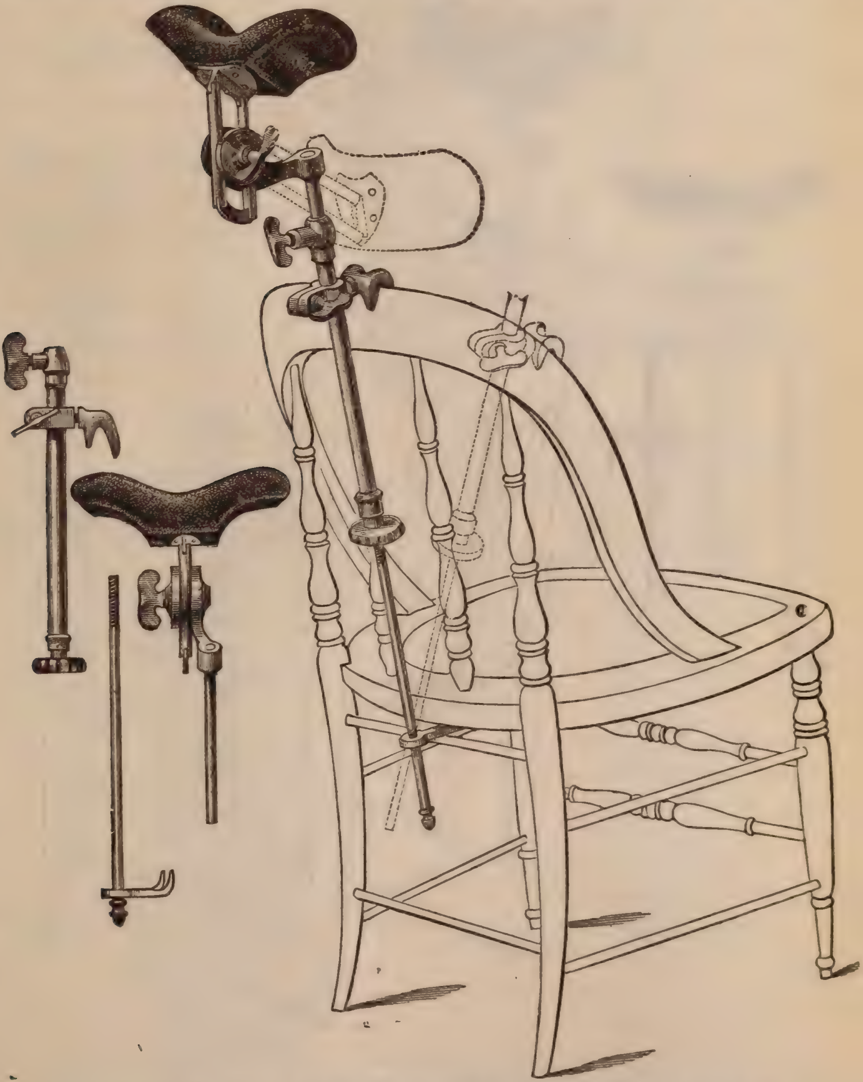
Price complete with two Flasks for Gas or Kerosene, with Guage as represented,	$21.00
With Thermometer and without Guage,	18.00.

CIRCULARS ON APPLICATION.

Snowden & Cowman Mfg. Co.'s

—NEW—

Portable Head-Rest.



PRICE, Full Nickel Plated, - - *$10.00*

—MANUFACTURED AND FOR SALE BY—

SNOWDEN & COWMAN MFG. CO.

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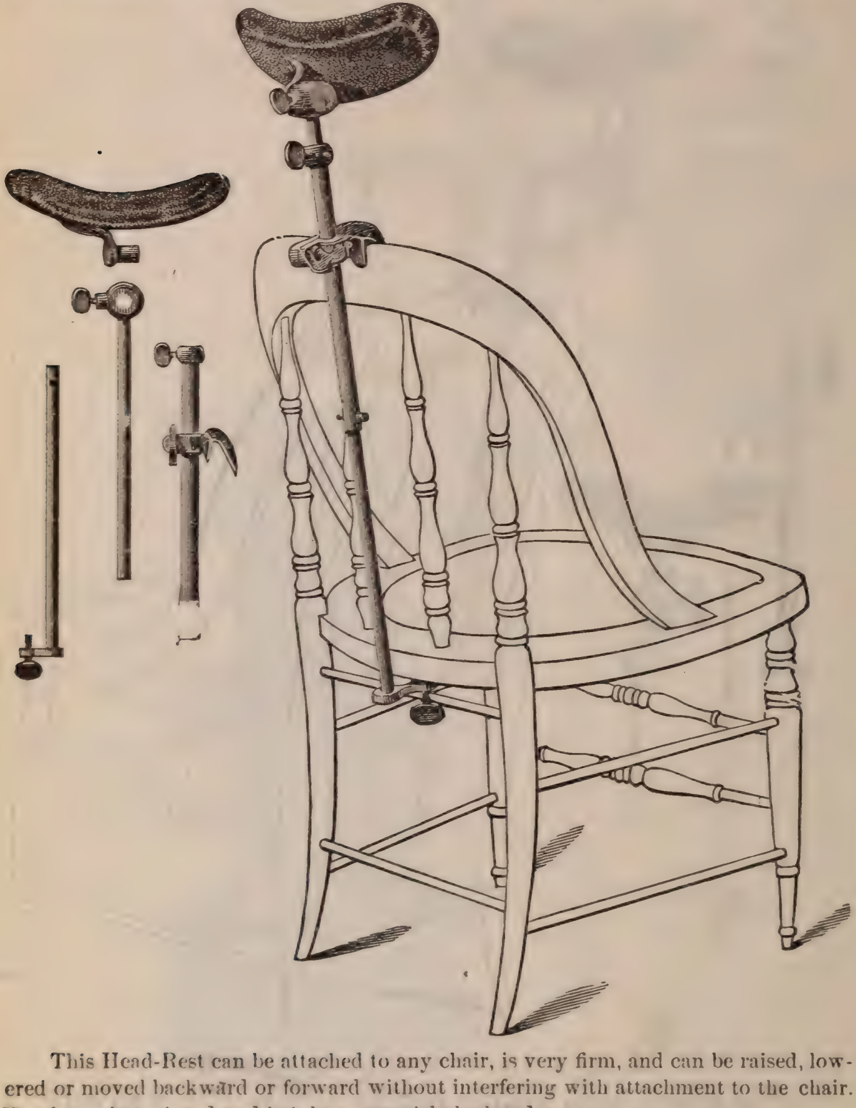
2"

Price Reduced!

SNOWDEN & COWMAN MFG. CO.'S

IMPROVED–

Portable Head-Rest.



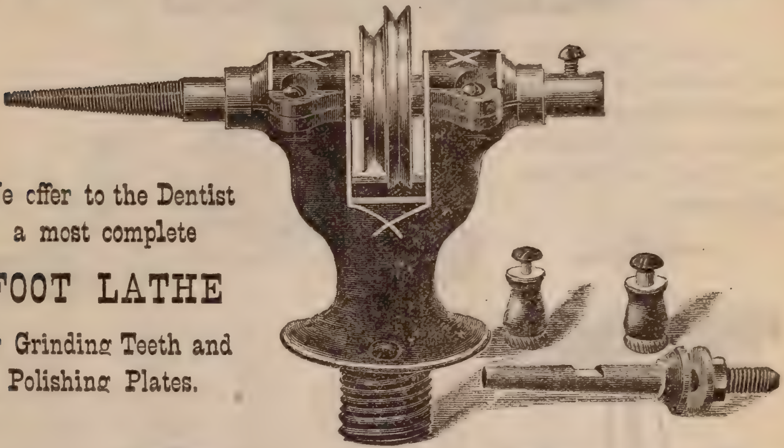
This Head-Rest can be attached to any chair, is very firm, and can be raised, lowered or moved backward or forward without interfering with attachment to the chair. Handsomely painted and bright parts nickel-plated.

It weighs only 4 lbs., and occupies a space only of 13 x 4 inches. PRICE, $4.50.

SNOWDEN & COWMAN MFG. CO., 9 W. Fayette St.

Price Reduced.

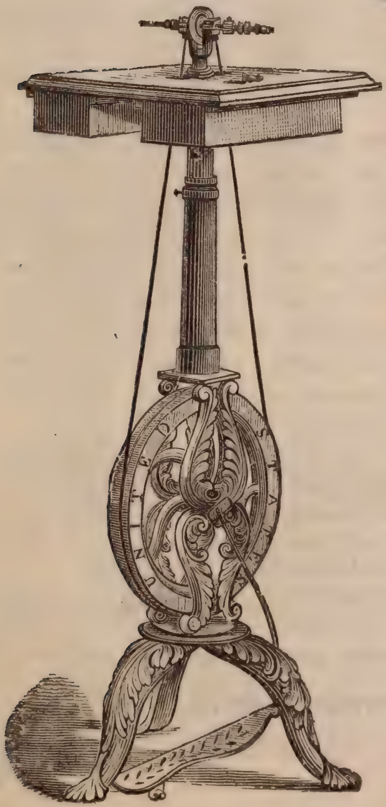
UNITED STATES LATHE.



We offer to the Dentist
a most complete

FOOT LATHE

for Grinding Teeth and
Polishing Plates.



It has been gotten up in a superior manner, great care having taken to make it durable and efficient. It has a movable column and table, which is capable of being elevated eight inches, to accommodate the operator in either a sitting or standing posture.

It can be packed in a box sixteen inches square, and can be set up in a few minutes, presenting a very neat and pleasing appearance, suitable for the office or laboratory. It is finished in bronze, and runs very light and steady.

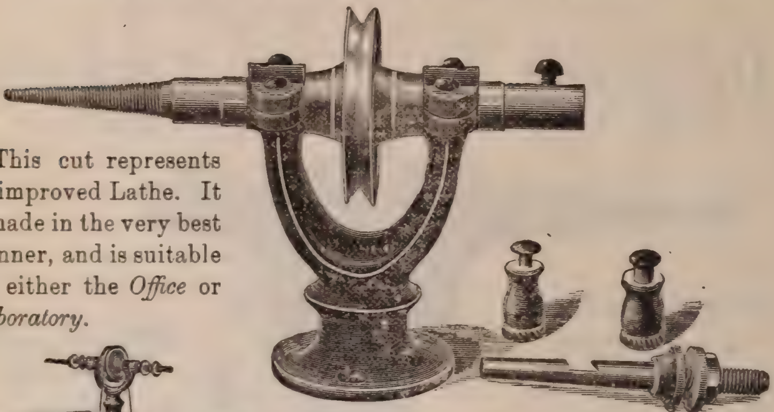
Price of Lathe complete with Short Spindle, as per cut,	$15.00
Price of Lathe complete with Long Spindle,	15.00
Price of Stand only, including Cord and and Coupling,	11.00

Snowden & Cowman Mfg. Co.,

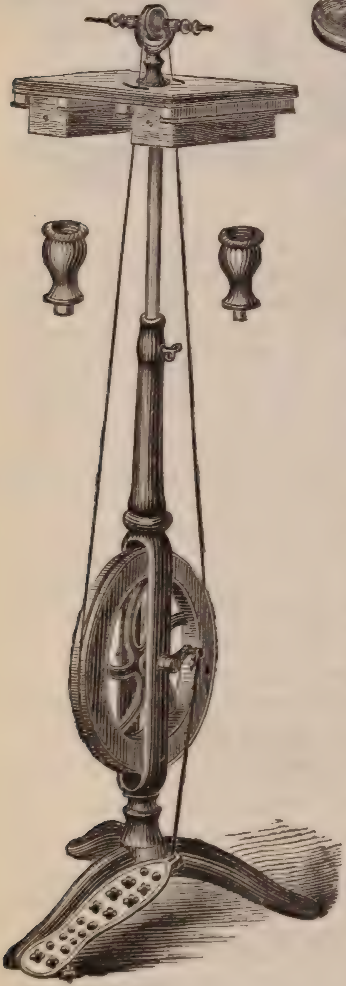
9 W. Fayette Street,

BALTIMORE, MD

AMERICAN LATHE, PRICE REDUCED.



This cut represents an improved Lathe. It is made in the very best manner, and is suitable for either the *Office* or *Laboratory*.



It has a solid spindle, one end of which is a taper screw for brush or felt wheels, and also, a space for a large corundum wheel. The other side of the spindle has a space for a large corundum wheel and a screw to receive the chucks, on which very small corundum wheels can be placed.

It has a movable column and table, which is capable of being elevated ELEVEN inches, to accommodate the operator in either a sitting or standing posture.

Either end of the spindle can be thrown towards the operator, if more convenient, by the set screw at the top of the column.

We also make for this Lathe a Socket Spindle—similar to our U. S. Lathe Short Spindle.

Price of Lathe, as per cut, with two Chucks, - - - -	$14.00
Price of Lathe, with Socket Spindle, with two Chucks, - -	14.00
Price of Lathe, with Extra Large Driving Wheel, - - -	15.00
Chucks, extra, - - - - -	.15

☞No charge for Boxing.

SNOWDEN & COWMAN MFG. CO.,

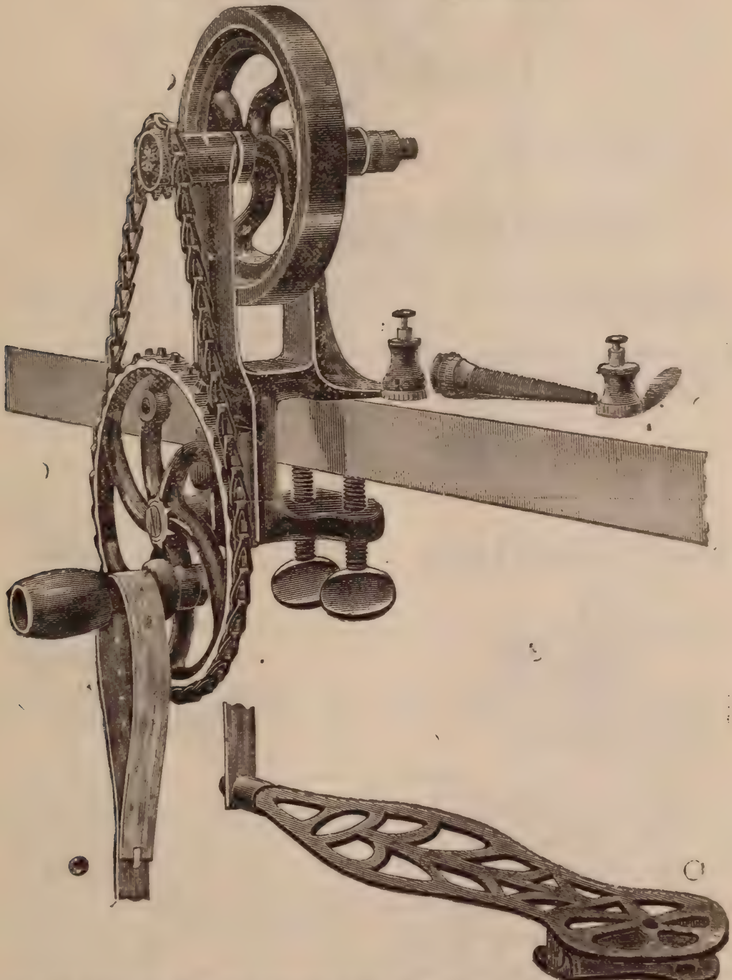
9 W. Fayette Street, Baltimore

SOMETHING NEW FOR TRAVELLING DENTISTS.

LINK CHAIN LATHE,

TO BE USED EITHER BY HAND OR FOOT POWER.

PRICE, - $7.00.



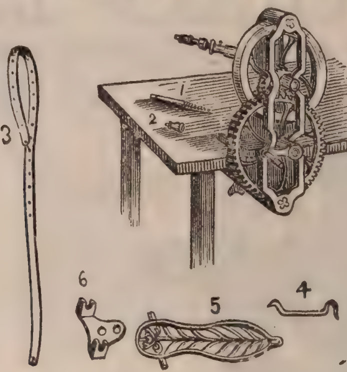
The Fly Wheel with Spindle is driven with an Endless Chain and makes very little noise, as it is propelled by large and small Sprocket Wheels, this gives it a very steady movement and does not require as much power as a geared lathe. It is fastened to table or bench by two Thumb Screws which make it impossible to turn when both are screwed up. It is very light and can be carried in a small satchell.

Snowden & Cowman Mfg. Co.,

9 W. Fayette Street, BALTIMORE, MD.

PRICE REDUCED.

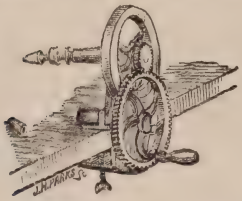
Portable Hand or Foot Lathe.



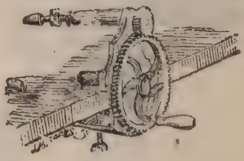
The above is a cut of a PORTABLE HAND OR FOOT LATHE, which is very efficient, manufactured for the traveling dentist; weighs under 7 pounds, and occupies the space of 6 by 9 inches. Members of the profession who have seen it pronounce it first rate.

Price, complete, - - - - - -	$5 50
Without Foot Attachment, - - -	5 00

Hand Fly Wheel Lathe.



Hand Lathe.



HAND FLY WHEEL LATHE.—It is intermediate between the Hand Lathe, and the Hand and Foot Lathe; it weighs only three pounds and is a first rate Lathe. - - PRICE, $4 50

HAND LATHE.—It is small, strong and durable, and weighs only two and a quarter pounds; we have sold a large number of these Lathes,—giving great satisfaction. - • PRICE $4 00

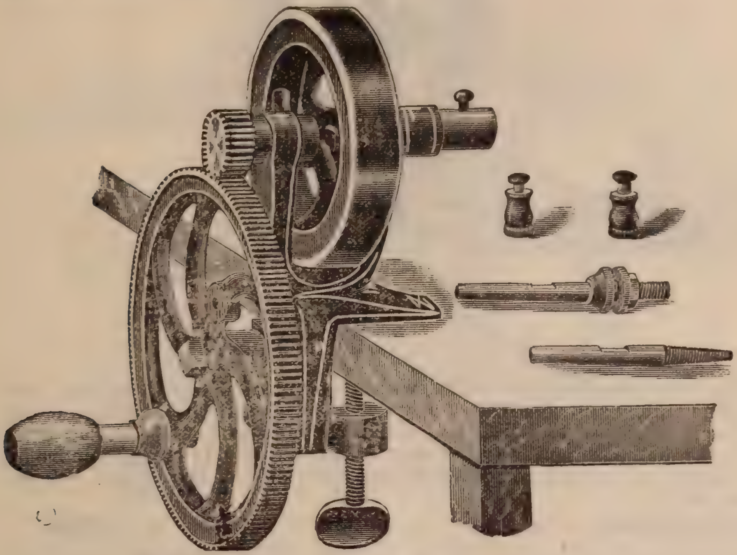
☞ All of the cog wheels of our Lathes are turned and cut on a machine, and are uniform, which makes them run true and with little noise.

SNOWDEN & COWMAN MF'G CO.,

No. 9 West Fayette St., Baltimore.

NEW HAND FLY WHEEL LATHE.

This Lathe is made larger and heavier and can be used with foot. It runs very steady and makes a good lathe for either Office Laboratory or to carry around. It is very neat.



PRICE, - - - -	$5 00
" with Foot Attachment and Strap,	5 50.

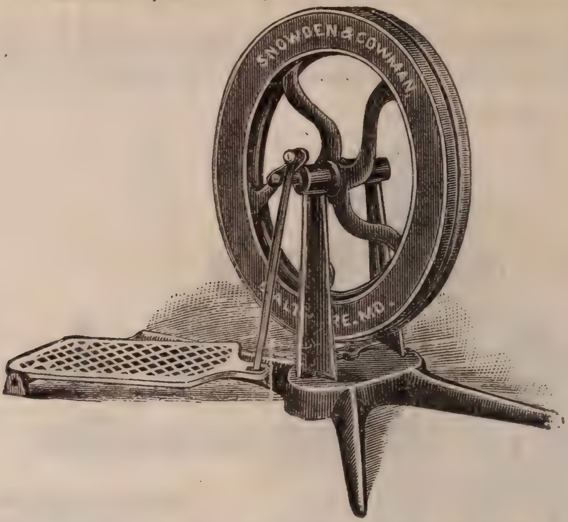
'The proof of the pudding is in the eating."

If the experience of dentists generally did not prove OUR GOLD AND PLATINA ALLOY a superior filling they would not be willing to pay nearly double more for it than the price of common amalgams. I suppose there is not another alloy or amalgam so generally used by our better class of dentists.

Welch's Alloy, 1 oz. $3.00; 2 oz. $5.50, 4 oz. $10.00; 10 oz. $22.00.
Welch's Amalgam, 1 oz. $2 00; 2 oz. $3.50; 4 oz. $7.00; 10 oz. $15.00.
Welch's Oxiphosphate, large $1.50; medium $1.00.
Liquids or powders, large 75 cts.: medium 50 cts.

T. B. WELCH, - - - - Vineland, N. J.

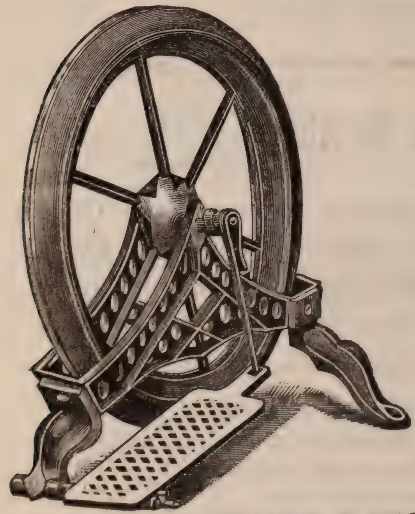
FLY WHEEL, No. 1, NEW.—Price Reduced.



This Fly Wheel weighs 30 lbs., with diameter of wheel 15 inches. The stand is the stiffest and steadiest of any driving wheel in the market. Owing to the position of the feet and the peculiar arrangement of the treadle, the wheel has an immense power and is very light running. In boxing remove pin that connects treadle with rod and fold treadle by side of the wheel. Weight complete, 46 lbs.

Price Boxed, - - - - - - **$7.00**

DIAMOND FLY WHEEL.—Price Reduced.



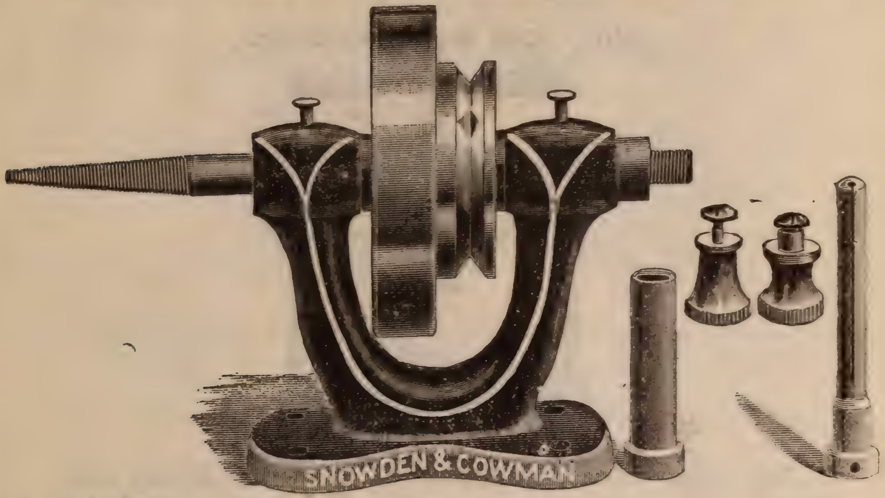
This fly-wheel is eighteen inches in diameter, with wrought iron spokes, in an iron frame, complete in itself, can be set any where, and runs very steady.

It has sufficient power and speed for any Dentist's Lathe Head. The feet are easily detatched, and all can be packed in a smaller box than any other Fly Wheel of its dimensions in the market.

Price Boxed, - - **$7.00.**

SNOWDEN & COWMAN MFG. CO.,
No. 9 W. FAYETTE STREET,
Baltimore.

OUR NEW LATHE HEAD.

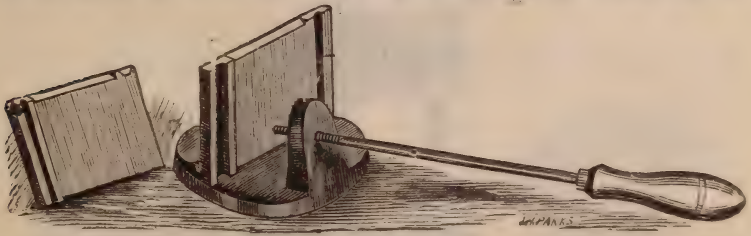


VERY SIMPLE AND EASY RUNNING.
ADJUSTMENT QUICKLY MADE.
VERY DURABLE AND STEADY.

PRICE WITH 4 CHUCKS, - - - $5.00.

SNOWDEN & COWMAN MFG. CO.'S

INGOT MOULDS.



No. 1, will cast a plate from one half of an inch to two inches in width, also a round, half-round and square bar. - $2.25

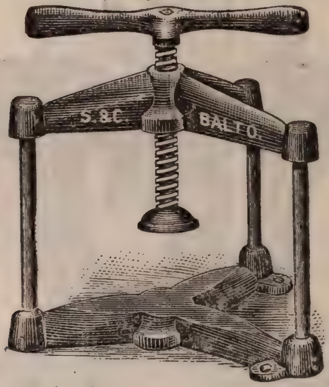
No 2, will cast a plate from one half of an inch to two and three quarter inches in width, also a round, half-round and square bar. - - - - - - - $2.75

No. 3, will cast a plate 3 inches wide and 4 inches long also round, half-round and square bar, - $3.25

LIBERAL DISCOUNT TO THE TRADE.

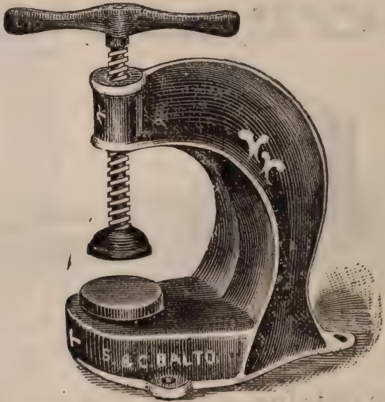
Flask Presses.

No. 1, Old Style Improved.



This Press is intended to close the flask after packing with rubber. It is of great advantage, saving screws and flasks. The upright rods are of wrought iron and the handle of the screw can be detached. They are *well made* and *very strong*, and has been made larger, so that it will take any Flask in the market. Price, - - - - $1.50.

No. 2, New Stvle.

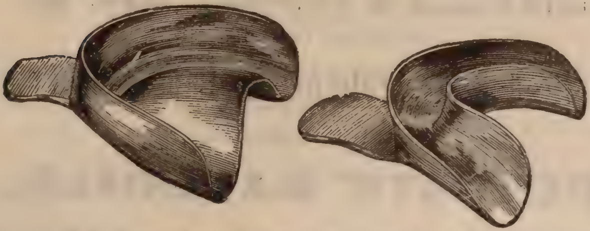


This Press is made of cast iron, very heavy, with steel screw and detachable handle. It has a Pivot Plate to level up the flask, insuring always a central pressure on the flask ; will take any flask in the market. Price - - $1.50

BRITANNIA IMPRESSION CUPS

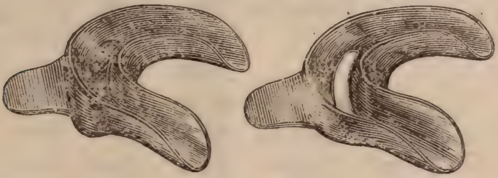
LONG HANDLES.

We Manufacture the following Sizes and Varieties:



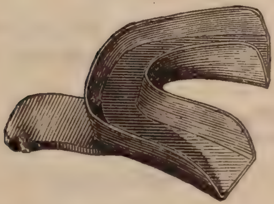
UPPER, Nos. 00, 0, 1, 2, 3, 4, 5, 6, 7.—(No. 00 is the largest size.)
LOWER, " 1, 2, 3, 4, 5. —(No 1 is the largest size.)

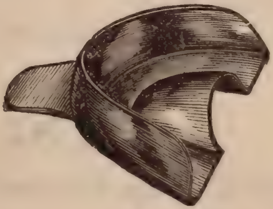
PARTIAL LOWER CUPS.



ENCLOSED CAVITY, Nos. 9, 10, 11.—(No. 9 is the larges size.)
OPEN CAVITY, Nos. 6, 7, 8. —(No. 6 is the largest size.)

UPPER AND LOWER CUPS.





PARTIAL UPPER—Flat Bottom, Nos. 8, 9, 10, 11—(No. 8 is the largest.)
FULL LOWER— " " " 12, 13, 14—(No. 12 is the largest.
PRICE..............................Each..................25cts

SNOWDEN & COWMAN MFG. CO.

9 West Fayette Street, Baltimore Md

Dental Depot,

ESTABLISHED 1856.

SNOWDEN & COWMAN MFG. CO.

MANUFACTURERS OF

Lathes, Head Rests, Vulcanizers, Impression Cups, &c.

AND DEALERS IN

DENTISTS' MATERIALS,

No. 9 W. Fayette St., between Charles & Liberty Sts

BALTIMORE.

GOLD FOIL.

	Per 2 oz.	oz.	½ oz.	¼ oz.	⅛ oz.
Abbey & Sons,		$32.00	$16.00	$8.00	$4.
Valleau's		30.00	15.00	7.50	4.
Ney & Co's.		29.00	15.00	7.50	4.
S. S. White's, ¼ Century,	$58.00	30.00	15.00	8.00	4.
" " Globe,	58.00	30.00	15.00	8.00	4.
" " 1000 Fine,	58.00	30.00	15.00	8.00	4.
R. S. Williams, Cylinders, A, " " " B, " " Rect, Pellets, " " Standard,		30.00	15.00	8.00	4.00
Watt's Crystal,		32.00	16.00	8.00	4.00
E. Rowan & Co.		29.00	15.00	3.20 per 1-10 oz.	
" untrimmed,				5.60 per 1-5 oz.	
"				2.90 per 1-10 oz.	

TIN FOIL.

Ney & Co's—Nos. 4, 6, 8, and 10, - -	40 Cents per Book
S. S. White's, - - - - - -	30 " " "
Nos. 4, 6, 8 & 10, (extra tough)	40 " " "

SNOWDEN & COWMAN MFG. CO.,

No. 9 West Fayette Street Baltimore

PORCELAIN TEETH.

GREATLY REDUCED.

We keep on hand a large assortment of Teeth of the following Manufacturers, which we

SELL AT THEIR REDUCED PRICES.

The S. S. White Dental Manf. Co.'s

	Each.	$10 lots.	$25 lots.	$50 lots.	$100 lots.	$300 lots.
Plain Rubber & Plate Teeth	.12	.11½	.11	.10	.09	.08
Gum Sectional Rubber, Plain Plate, long Pins, Single Gum Rubber and Gum Plate Teeth,	.12½	.12	.11½	.11	.10	.09

H. D. JUSTI & SON'S.

	Each.	$10 lots.	$25 lots.	$50 lots.	$100 lots.	$300 lots.
Plain Rubber and Plate,	12.	.11½	.11	.10	.09	.08
Gum Sectional Rubber, Plain Plate, Single Gum Rubber and Gum Plate,	.12½	.12	.11½	.11	.10	.09

Gideon Sibley's Gum or Plain Teeth.

Per Set 14	Gum	or	Plain,	$ 1 00
11 Sets,	"	"	"	10 00
29 "	"	"	"	25 00
60 "	"	"	"	50 00
125 "	"	"	"	100 00

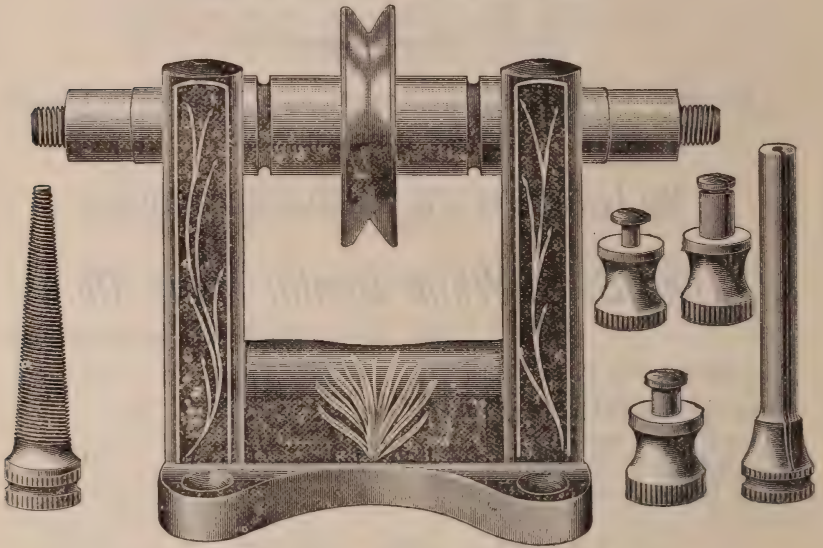
Less than Set of Fourteen Eight Cents per Tooth.

SNOWDEN & COWMAN MFG. CO.

DENTAL DEPOT

No. 9 W. Fayette Street

NEW MODEL LATHE HEAD.



THIS ILLUSTRATION REPRESENTS ABOUT ONE-HALF SIZE OF THE HEAD. IT RUNS VERY SMOOTH AND LIGHT AND IS VERY SIMPLE. IT CAN BE RUN BY ANY DRIVING WHEEL.

Price with Five Chucks, as Represented, - $4.75.

SNOWDEN & COWMAN MFG. CO.,

DENTAL DEPOT,

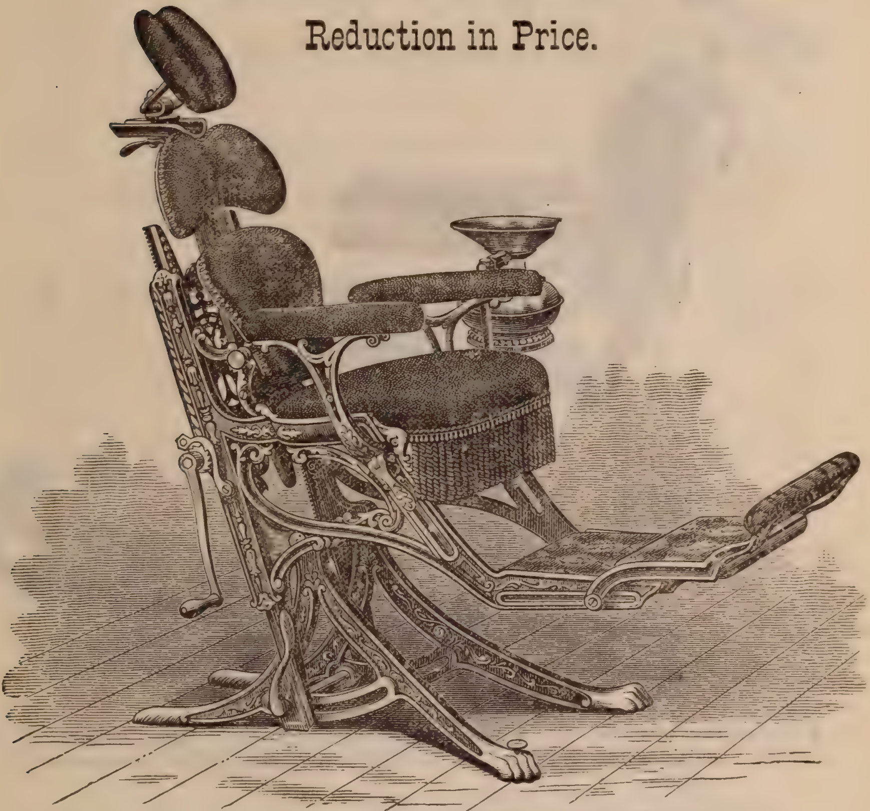
9 West Fayette Street,

TRADE SUPPLIED. BALTIMORE, MD.

THE MORRISON DENTAL CHAIR.

Reissue May 15, 1877. English Patent Dec

Reduction in Price.



PRICES.

In best quality Green or Garnet Plush or Plain Morocco . . .	$ 90.00
In Real Morocco, Embossed	100.00
In finest quality Green or Garnet Plush, puffed and trimmed with Silk Plush, full Turkish Upholstery	110.00

The Illustration shows No. 4 Spittoon, No. 3 Bracket, No. 3 Socket, which are extra and add $7.00 to above price.

BOXING FREE.

STUDENT'S MORRISON CHAIR.

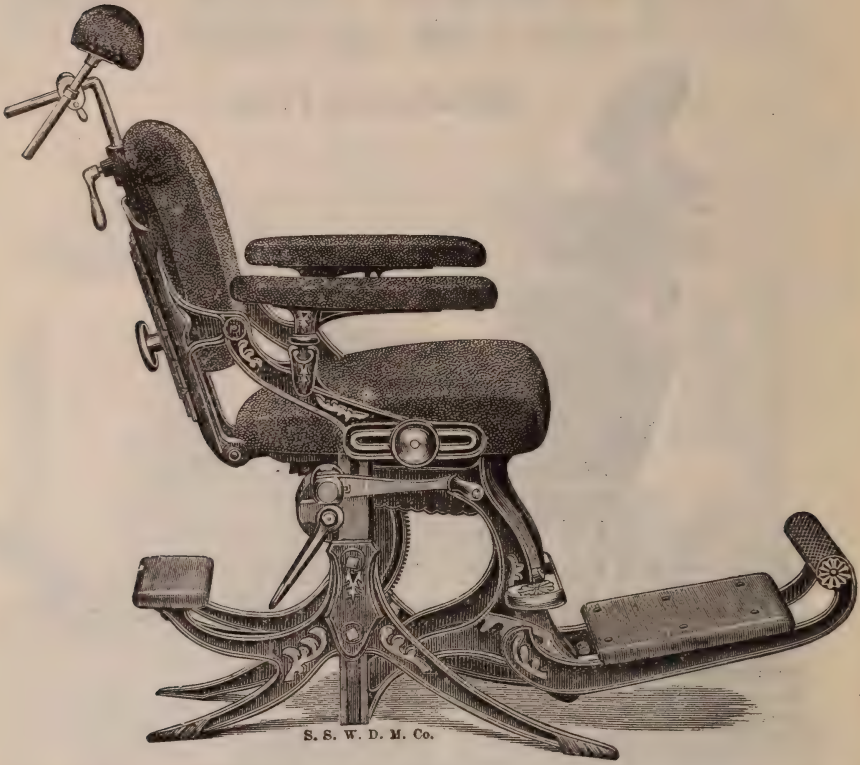
To meet an often-expressed want of a first-class chair at a low price, the Student's Morrison was brought out. It is, in all respects, equal to the regular Morrison chair, except that it is upholstered in a seal-brown corded material, instead of a plush. It presents a very neat appearance, and will wear nearly as well as plush.

PRICE.

In Corded Upholstery.	$ 76.00

For Sale by Snowden & Cowman Mfg. Co., 9 W. Fayette St., Baltimore.

Reduction in Price of the Cycloid Chair.



Patented December 28, 1875; July 3, 1877; November 20, 1877; March 9, 1880; May 22 1883. Re-issues July 4, 1876; March 19, 1878; August 27, 1878. Others pending.

This Chair was designed especially to meet a demand for a chair which, while affording a variety of essential movements, could be sold at a lower price than the Wilkerson, The S. S. White Pedal-lever, or the Morrison.

For those who want a low-priced chair which in facility of movements far surpasses anything heretofore offered for the money, the Cycloid is *the* chair. It is strongly built, and the finish and general appearance make it a desirable addition to a well-furnished office.

The lifting mechanism, which has a range of 10 inches, is entirely new and is worked with great ease and rapidity. Should the crank by accident slip from the hand the descend of the Chair is automatically arrested.

The arms are so arranged that they may be rotated out of the way of the operator and yet be of service to the patient.

The foot-board can be adjusted in four positions, and a permanent support for the foot of the operator is placed at the back of the base, the convenience of which will be obvious to those who are in the habit of using a "cricket."

Nearly all of the movements can be made with one hand while standing at the side of the Chair.

Price, upholstered in Corded Material,	$ 63.00
" " Best Quality Maroon or Green Plush,	76.00

For Sale by SNOWDEN & COWMAN MFG. CO

Snowden & Cowman Mfg. Co.'s

DENTIST'S CASE BOOKS,

For Recording all Operations in Dentistry

WITH

TITLE PAGE, INDEX or ALPHABET, and the pages numbered, printed on fine paper with a DIAGRAM of the teeth at the top of each page, neatly and substantially bound in muslin.

PRICES.

One Quire Book,	$1 00
Two "	1 75
Three "	2 50
Four "	3 25

DENTISTS' BILL HEADS.

These Bill Heads are printed on fine paper with diagram of the teeth on each, in the following sizes :

No. 1.—Size, 8½ inches wide by 7 inches, Price per 100,	$ 30
No. 2.—Size, 4½ inches wide by 7 inches, "	40
No. 3.—Size, 8½ inches wide by 7 inches, "	40

JOB PRINTING.

Having fitted up a Printing Office in our establishment, we are prepared to fill at the very shortest possible notice, orders for various kinds of Printing, such as

CIRCULARS, BILL HEADS, NOTE HEADS,
STATEMENTS, HEADINGS, LABELS,
ENVELOPES, CARDS, &C.

☞Liberal Discount to the Trade.

PUBLISHERS OF

The American Journal of Dental Science,

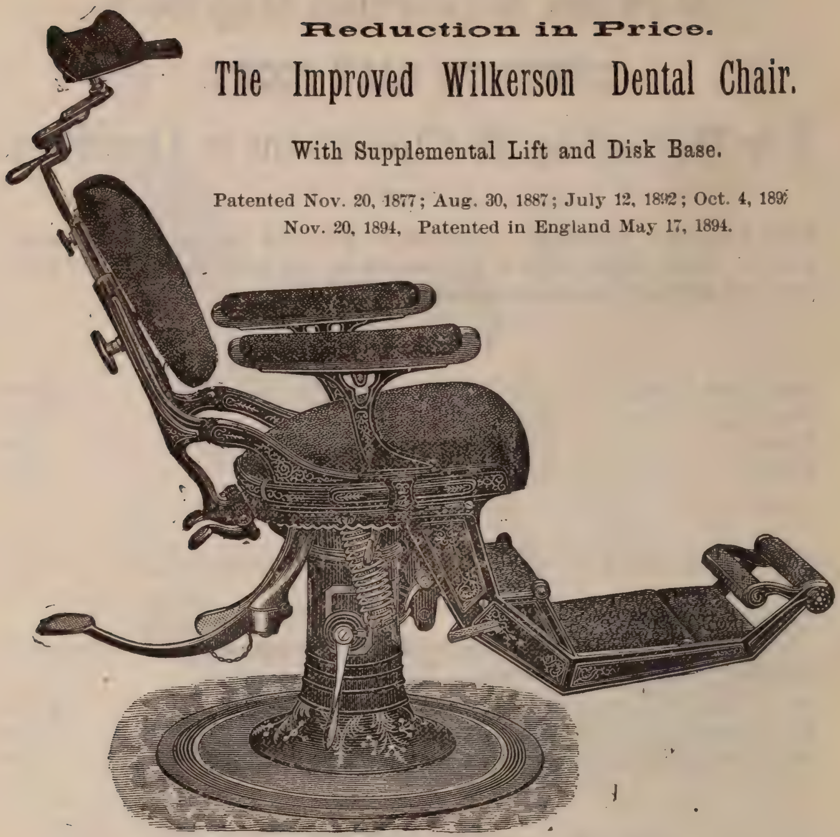
$2.50 PER YEAR.

Reduction in Price.

The Improved Wilkerson Dental Chair.

With Supplemental Lift and Disk Base.

Patented Nov. 20, 1877; Aug. 30, 1887; July 12, 1892; Oct. 4, 189
Nov. 20, 1894, Patented in England May 17, 1894.



LOWEST POSITION OF THE CHAIR.

Supplemental Lift for the Wilkerson Chair.

One of the most difficult problems in the production of a first-class dental chair has been to obtain the great range of vertical adjustment which is desirable to meet the needs of the dentist without incurring one or more objectionable complications, such as the cutting of the floor of the operating-room or the telescoping of the supports.

The Supplemental Lift, when placed upon the Low or Medium-Base Wilkerson Chair, enables us to meet this problem in a more satisfactory manner than anything hitherto offered.

When placed intermediate between the regular plunger elevating device and the body or frame of the chair, it is possible to lift the chair, before the patien steps in, either five or ten inches, after which the treadle elevating apparatus may be used, as before, thus in fact increasing the vertical range of the chair by the amount of the adjustment mentioned, ten inches.

The operation of the apparatus is simple, the weight of the chair body being almost perfectly balanced by springs, so that it may be raised five inches to the first notch; or through the entire range of ten inches, by lifting by the chair arm.

PRICES. The supplemental lift adds twenty-five dollars to the prices of the Disk Base chair as given on the opposited page.

For Sale by SNOWDEN & COWMAN MFG. CO.,
9 West Fayette Street, Baltimore.

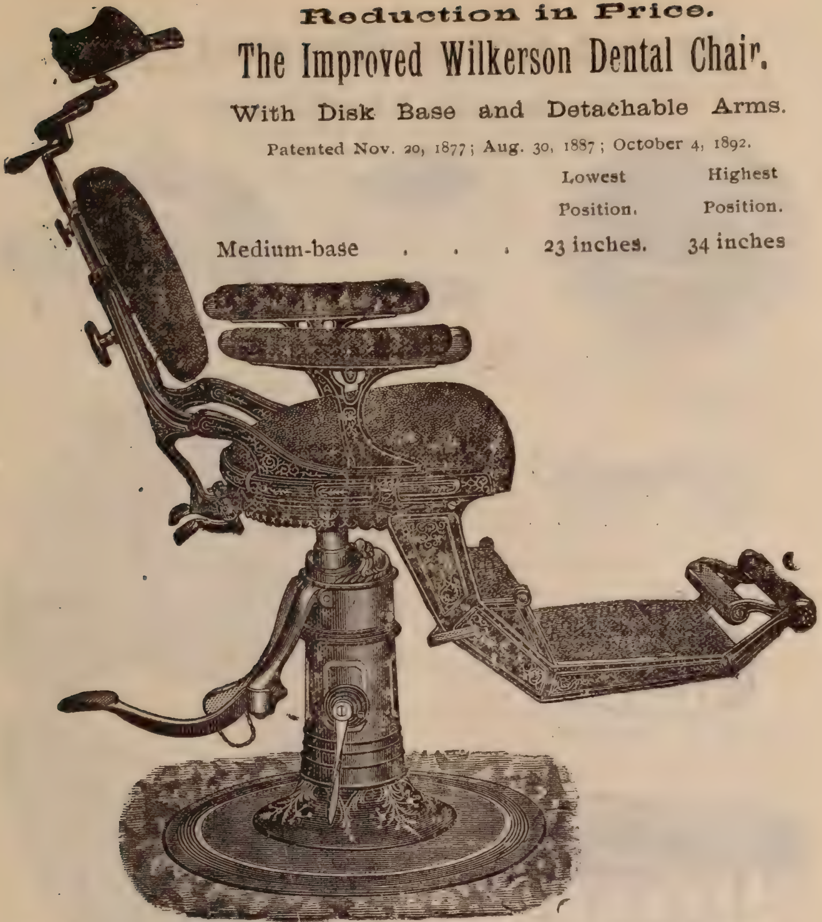
Reduction in Price.

The Improved Wilkerson Dental Chair.

With Disk Base and Detachable Arms.

Patented Nov. 20, 1877; Aug. 30, 1887; October 4, 1892.

	Lowest Position.	Highest Position.
Medium-base . . .	23 inches.	34 inches



To accommodate those who prefer the Disk Base we have added to our line of dental Chairs the Wilkerson in this style, as shown in the cut, and we are now ready to furnish the *medium range* Chair on the Disk Base.

The high and low range Chairs with Disk Base are now in process of manufacture and will soon be ready for delivery.

Prices of the Wilkerson Chairs, with either Disk or Leg Base, are the same. *In ordering chairs be particular to state if Disk Base is wanted; if not specified, the regular form will be sent.*

PRICES.

	Medium Bas
In Best Quality Green or Maroon Plush	$125.00
" Maroon Plain Turkey Morocco	125.00
" French Finish Maroon-colored Leather	125.00
" Seal	132.00
" Best Quality Green or Maroon Plush, puffed with Plush, trimmed with Silk Cord, with Wilton Capet .	145.00
" Embossed Turkey Morocco, puffed with plain Morocco, edged with Cord, with Carpet to match . .	155.00

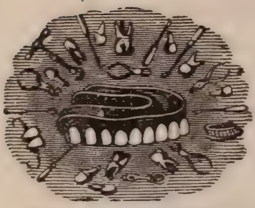
Watkins Sectional Head-Rest adds ten dollars ($10.00) to the above prices.

BOXING FREE.

For Sale by SNOWDEN & COWMAN MFG. Co.,
9 West Fayette Street, Baltimore.

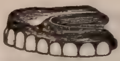
Dental Cuts---Electrotypes.

For Business Advertisements.

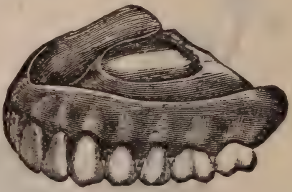


No. 1....50 cents.

No. 7.....30 cents.

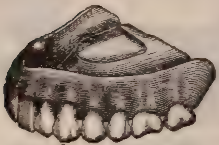


No. 4.....30 cents.

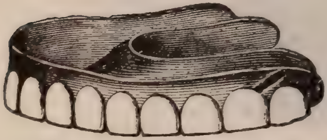


No. 2....50 cents.

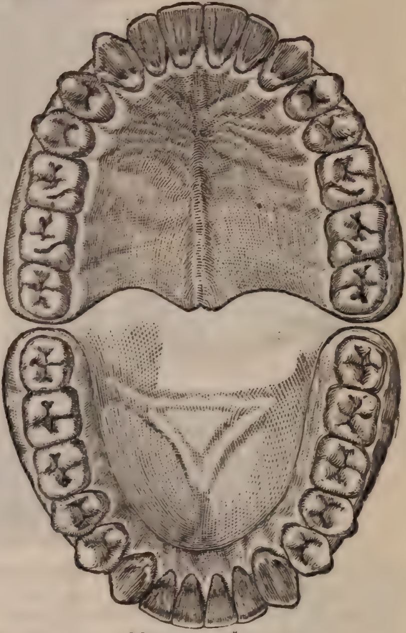
No. 3....30 cents



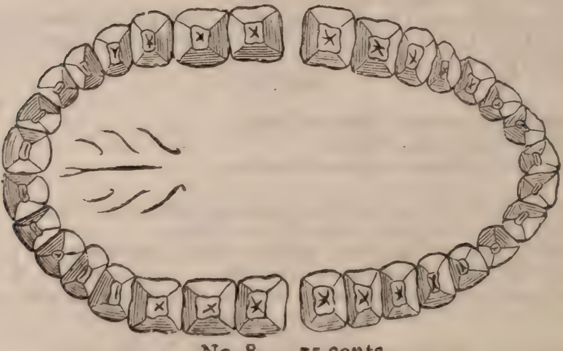
No. 6 ....40 cents.



No. 5....50 cents.



No. 9....$1.00.



No. 8....75 cents.

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From - - - - -	.90 to $4.00 each

RE-DISTILLED MERCURY.

Put up in four ounce vials, - - - - each	.50

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S. S. White's 1, 2, 3, 4, per pound, - - -	75
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GUTTA-PERCHA FILLING.

The S. S. White M'f'g. Co's Pellets, per ounce, - -	$2.00
Put up in boxes containing ½, ¼, 1-10, 1-20 ounces.	
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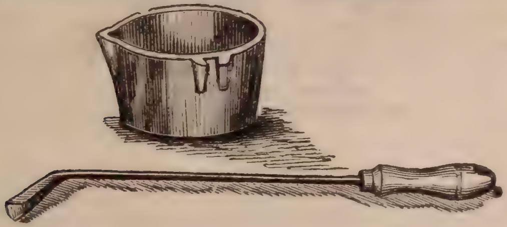
Put up in boxes containing 1-4, 1-8 and 1-16 ounces.	

FOWLER'S TEMPORARY STOPPING.

Price per ounce, - - - - - - -	.50

Ladles and Handles.



We make three sizes of Ladles; one handle will fit each Ladle, and is removed when the Ladle is placed on the fire.

No. 1, is 5 inches diameter, and 3 inches deep.
" 2, " 4¾ " " " 3 "
" 3, " 4½ " " " 2½ "

PRICE.—2 Ladles, (Nos. 2 and 3,) with 1 Handle....................	75
Nos. 2 and 3 Ladles, without handle, each..................	25
No. 1 large " " " "	40
Handles of wrought iron, each..............................	25

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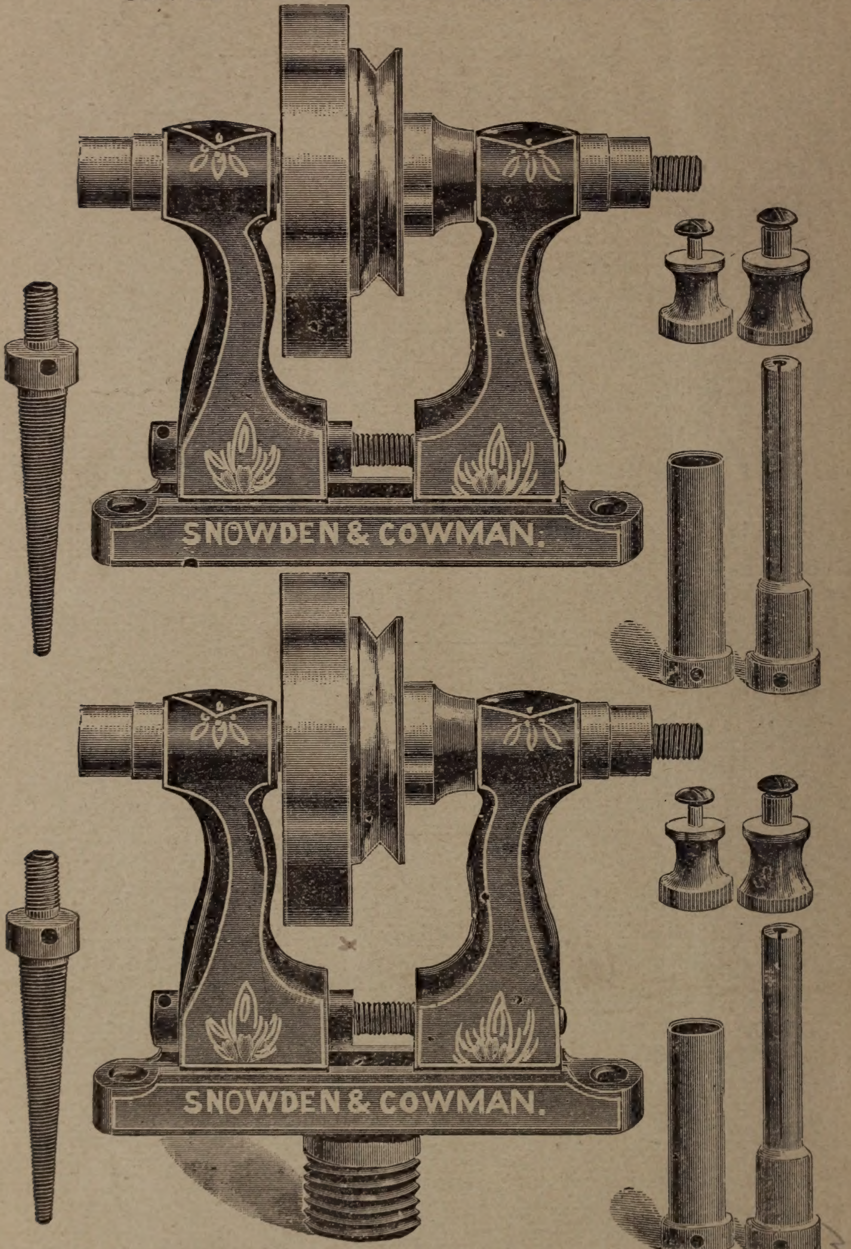
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